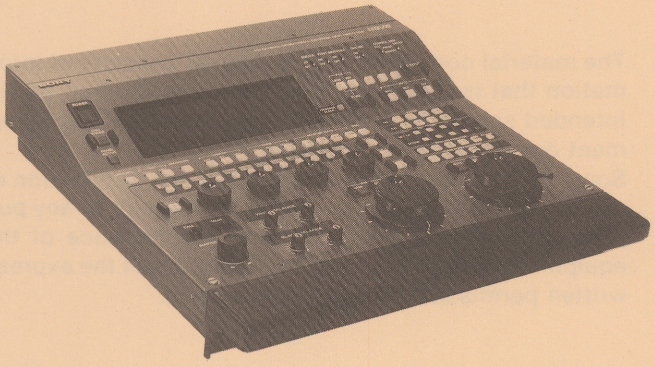
SONY®

HD CAMERA OPERATIONAL CONTROL UNIT

HDCO-350



HDVS

MAINTENANCE MANUAL

Volume 2 1st Edition
Serial No. 10001 and Higher

SAFETY RELATED COMPONENT WARNING

Components identified by shading and ⚠ marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

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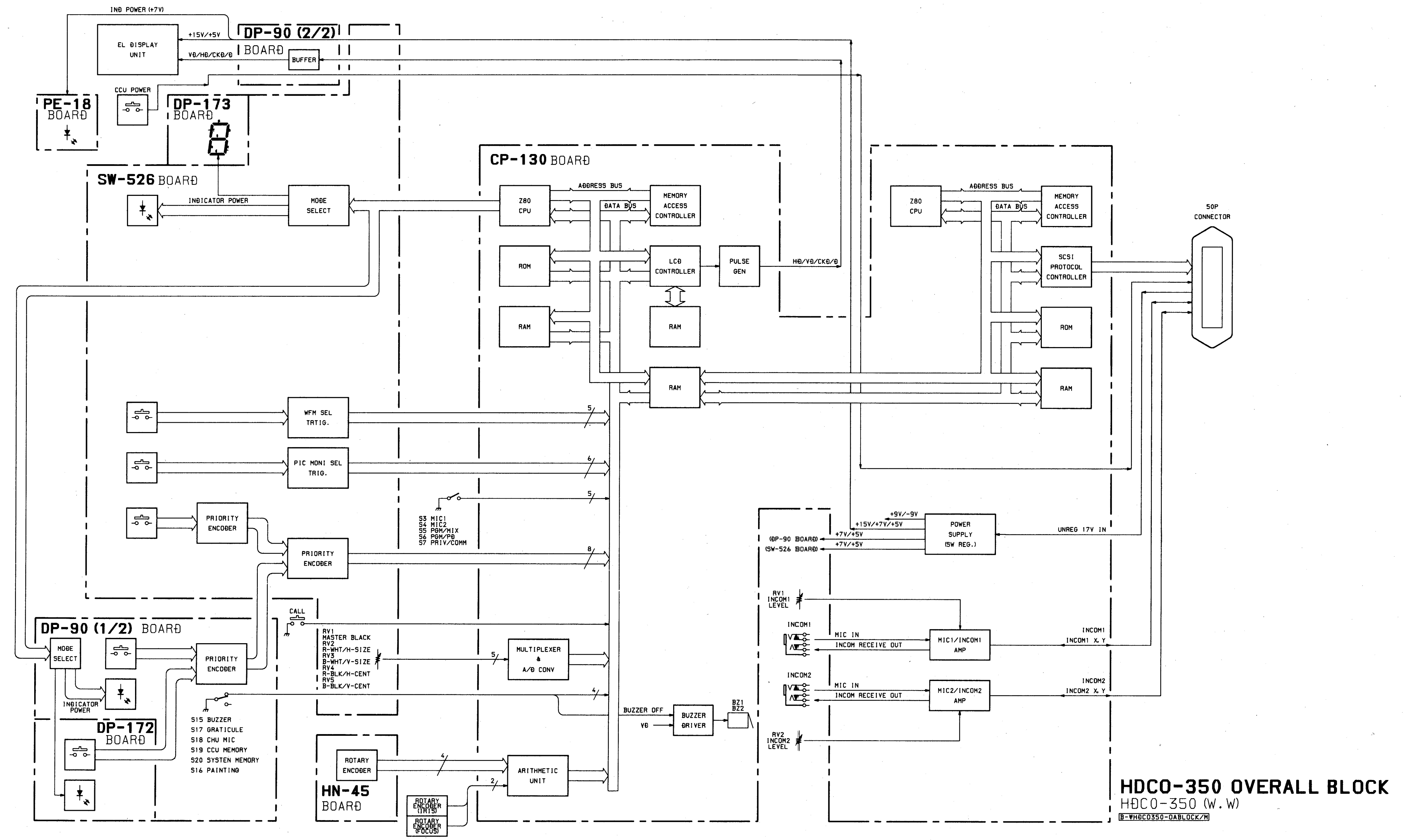
SECTION A
BLOCK DIAGRAMS

OVERALL BLOCK

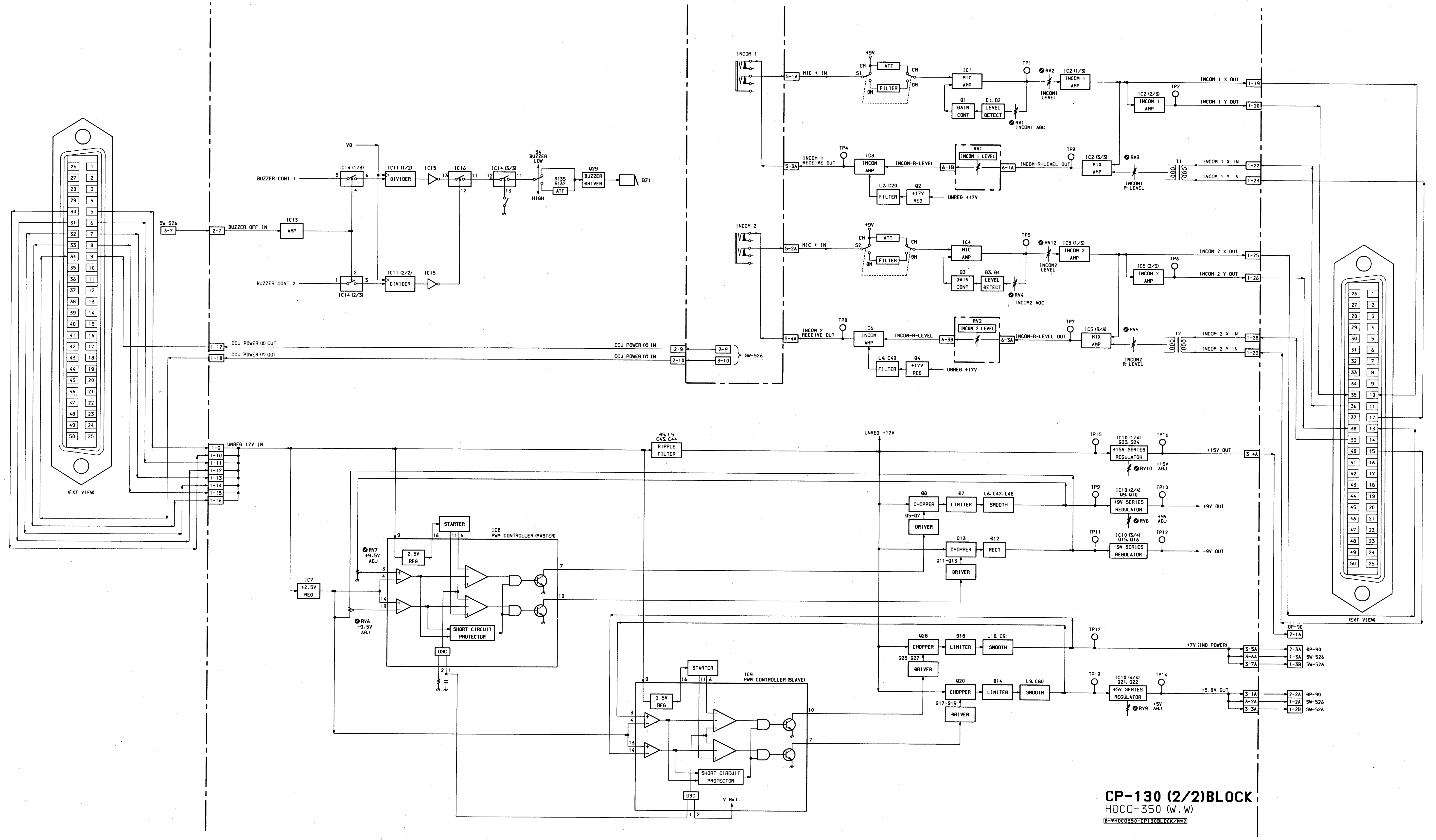

IND POWER (+7V)
EL DISPLAY UNIT
+15V/+5V
VD/HD/CKD/D
DP-90 (2/2) BOARD
BUFFER
CCU POWER
PE-18 BOARD
DP-173 BOARD
SW-526 BOARD
INDICATOR POWER
MODE SELECT
WFM SEL TRTIG.
PIC MONI SEL TRIG.
PRIORITY ENCODER
PRIORITY ENCODER
S3 MIC1
S4 MIC2
S5 PGM/MIX
S6 PGM/PD
S7 PRIV/COMM
DP-90 (1/2) BOARD
MODE SELECT
PRIORITY ENCODER
INDICATOR POWER
DP-172 BOARD
S15 BUZZER
S17 GRATICULE
S18 CHU MIC
S19 CCU MEMORY
S20 SYSTEN MEMORY
S16 PAINTING
CALL
RV1
MASTER BLACK
RV2
R-WHT/H-SIZE
RV3
B-WHT/V-SIZE
RV4
R-BLK/H-CENT
RV5
B-BLK/V-CENT
MULTIPLEXER & A/D CONV
ROTARY ENCODER
HN-45 BOARD
ROTARY ENCODER (IRIS)
ROTARY ENCODER (FOCUS)
ARITHMETIC UNIT
CP-130 BOARD
Z80 CPU
ADDRESS BUS
DATA BUS
MEMORY ACCESS CONTROLLER
ROM
RAM
LCD CONTROLLER
PULSE GEN
RAM
RAM
HD/VD/CKD/D
5
6
5
8
5
4
4
2
BUZZER OFF
VD
BUZZER DRIVER
BZ1
BZ2
Z80 CPU
ADDRESS BUS
DATA BUS
MEMORY ACCESS CONTROLLER
SCSI PROTOCOL CONTROLLER
ROM
RAM
50P CONNECTOR
+9V/-9V
+15V/+7V/+5V
+7V/+5V
+7V/+5V
(DP-90 BOARD)
(SW-526 BOARD)
POWER SUPPLY (SW REG.)
UNREG 17V IN
RV1 INCOM1 LEVEL
INCOM1
MIC IN
INCOM RECEIVE OUT
MIC1/INCOM1 AMP
INCOM1
INCOM1 X, Y
INCOM2
MIC IN
INCOM RECEIVE OUT
MIC2/INCOM2 AMP
INCOM2
INCOM2 X, Y
RV2 INCOM2 LEVEL
HDCO-350 OVERALL BLOCK
HDCO-350 (W.W)
B-¥HDCO350-OABLOCK/M

CP-130 BLOCK (1/2)

1
2
3
4
5
HN-45
HN-45
HN-45
HN-45
(FOCUS)
(IRIS)
IC43 Z80 CPU
IC51 Z80 CPU
I/O ADDRESS DECODER
MEMORY ADDRESS DECODER
64K RAM
256K PROM
MEMORY ACCESS CONTROLLER
SC51 PROTOCOL CONTROLLER
IC73 LCD CONTROLLER
COMPARATOR
LATCH
UP/DOWN COUNTER
FUNCTION FREQ SELECTOR
OSC 12.0MHz
CLK A
CLK B
1/2 CLK
BUFFER
POWER RESET
IC106 ANALOG DATA ACQUISITION UNIT
ANALOG MPX
TIMING GEN
SUCCESSIVE APPROX REG
COMP
D/A CONV
BUS CONT
PHASE SET
8-LINE LATCH
BOUNCE ELIMINATOR
DECODER
SW-526
EXT VIEW
CKD OUT
VD
HD
D OUT

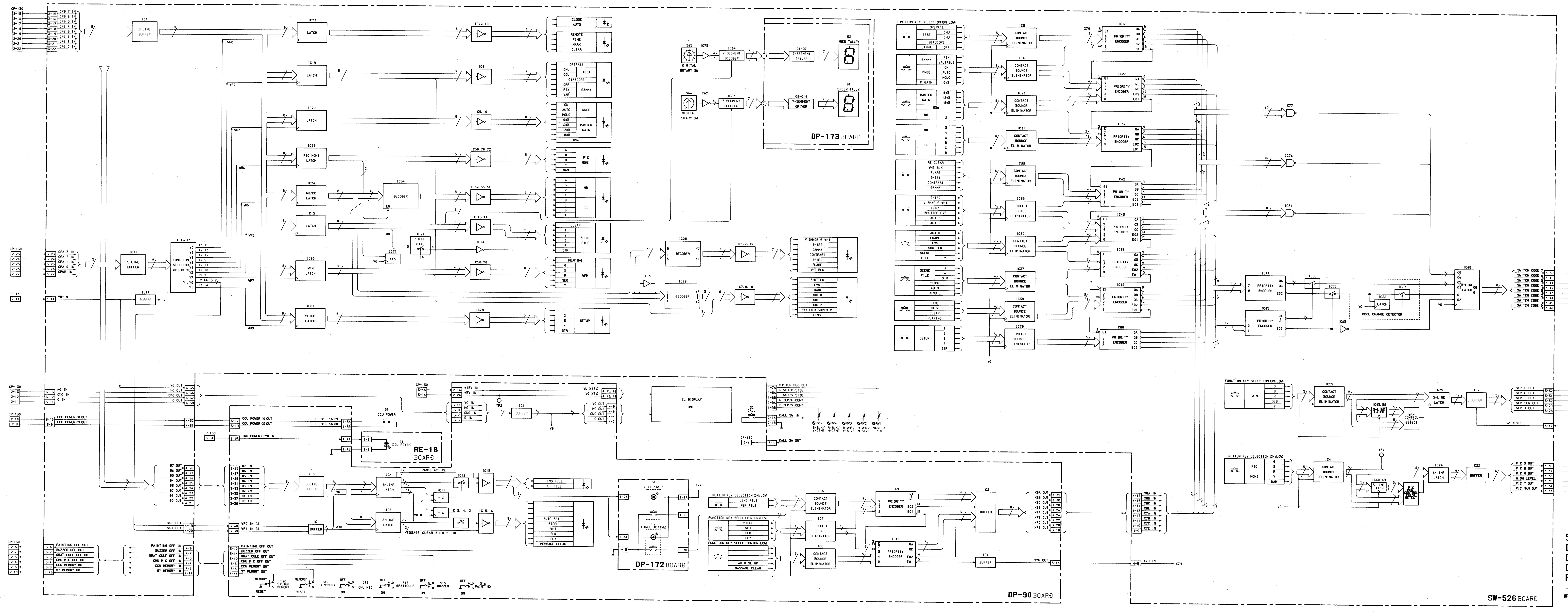
CP-130 (1/2) BLOCK
HDCO-350 (W.W)

CP-130 BLOCK (2/2)


EXT VIEW
SW-526
3-7
2-7
BUZZER OFF IN
IC13
AMP
VD
BUZZER CONT 1
BUZZER CONT 2
IC14 (1/3)
IC14 (2/3)
IC11 (1/2)
IC11 (2/2)
DIVIDER
IC15
IC16
IC14 (3/3)
S4 BUZZER LOW
HIGH
R135 R137
ATT
Q29
BUZZER DRIVER
BZ1
1-17
CCU POWER (X) OUT
1-18
CCU POWER (Y) OUT
CCU POWER (X) IN
CCU POWER (Y) IN
2-9
2-10
3-9
3-10
SW-526
INCOM 1
5-1A
MIC + IN
+9V
CM
S1
ATT
FILTER
DM
IC1
MIC AMP
Q1
GAIN CONT
D1, D2
LEVEL DETECT
RV1
INCOM1 AGC
TP1
RV2
INCOM1 LEVEL
IC2 (1/3)
INCOM 1 AMP
IC2 (2/3)
TP2
INCOM 1 X OUT
1-19
INCOM 1 Y OUT
1-20
5-3A
INCOM 1 RECEIVE OUT
TP4
IC3
INCOM AMP
INCOM-R-LEVEL
6-1B
RV1
INCOM 1 LEVEL
6-1A
INCOM-R-LEVEL OUT
TP3
IC2 (3/3)
MIX AMP
RV3
INCOM1 R-LEVEL
T1
INCOM 1 X IN
1-22
INCOM 1 Y IN
1-23
L2, C20
FILTER
Q2
+17V REG
UNREG +17V
INCOM 2
5-2A
S2
IC4
Q3
D3, D4
RV4
INCOM2 AGC
TP5
RV12
INCOM2 LEVEL
IC5 (1/3)
INCOM 2 AMP
IC5 (2/3)
TP6
INCOM 2 X OUT
1-25
INCOM 2 Y OUT
1-26
5-4A
INCOM 2 RECEIVE OUT
TP8
IC6
6-3B
RV2
INCOM 2 LEVEL
6-3A
TP7
IC5 (3/3)
RV5
INCOM2 R-LEVEL
T2
INCOM 2 X IN
1-28
INCOM 2 Y IN
1-29
L4, C40
Q4
UNREG 17V IN
D5, L5 C43, C44
RIPPLE FILTER
UNREG +17V
IC7
+2.5V REG
RV7 +9.5V ADJ
RV6 -9.5V ADJ
STARTER
IC8
PWM CONTROLLER (MASTER)
2.5V REG
SHORT CIRCUIT PROTECTOR
OSC
IC9
PWM CONTROLLER (SLAVE)
V Ref.
TP15
IC10 (1/4) Q23, Q24
+15V SERIES REGULATOR
TP16
RV10
+15V ADJ
+15V OUT
3-4A
Q8
CHOPPER
D7
LIMITER
L6, C47, C48
SMOOTH
Q5-Q7
DRIVER
TP9
IC10 (2/4) Q9, Q10
+9V SERIES REGULATOR
TP10
RV8
+9V ADJ
+9V OUT
Q13
D12
RECT
Q11-Q13
TP11
IC10 (3/4) Q15, Q16
-9V SERIES REGULATOR
TP12
-9V OUT
Q28
D18
L10, C91
Q25-Q27
TP17
+7V (IND POWER)
3-5A
3-6A
3-7A
2-3A
1-3A
1-3B
DP-90
SW-526
2-1A
Q20
D14
L9, C80
Q17-Q19
TP13
IC10 (4/4) Q21, Q22
+5V SERIES REGULATOR
TP14
RV9
+5V ADJ
+5.0V OUT
3-1A
3-2A
3-3A
2-2A
1-2A
1-2B

CP-130 (2/2)BLOCK
HDCO-350 (W.W)
B-¥HDCO350-CP130BLOCK/M#2

SW-526 BLOCK
DP-90 BLOCK
DP-172 BLOCK
DP-173 BLOCK
PE-18 BLOCK


8-LINE BUFFER
LATCH
PIC MONI LATCH
NB/CC LATCH
WFM LATCH
SETUP LATCH
DECODER
FUNCTION SELECTOR DECODER
5-LINE BUFFER
BUFFER
STORE GATE
7-SEGMENT DECODER
7-SEGMENT DRIVER
DIGITAL ROTARY SW
DP-173 BOARD
CONTACT BOUNCE ELIMINATOR
PRIORITY ENCODER
8-LINE LATCH
MODE CHANGE DETECTOR
FUNCTION KEY SELECTION(ON:LOW)
CLOSE
AUTO
REMOTE
FINE
MARK
CLEAR
OPERATE
TEST
DIASCOPE
GAMMA
KNEE
MASTER GAIN
PIC MONI
NO
CC
SCENE FILE
PEAKING
WFM
SETUP
SWITCH CODE
EL DISPLAY UNIT
CCU POWER
RE-18 BOARD
PANEL ACTIVE
LENS FILE
REF FILE
AUTO SETUP
STORE
WHT
BLK
BLY
MESSAGE CLEAR
DP-172 BOARD
DP-90 BOARD
SW-526 BOARD
MEMORY RESET
SYSTEM MEMORY
CCU MEMORY
CHU MIC
GRATICULE
BUZZER
PAINTING

SW-526 BLOCK
DP-90 BLOCK
DP-172 BLOCK
DP-173 BLOCK
PE-18 BLOCK
HDCO-350 (W.W)
B-¥HDCO350-SW526DP90BLOCK/M

SECTION B
SEMICONDUCTOR PIN ASSIGNMENT

The circuit diagram of IC is obtained from the IC data book published by the manufacturer.

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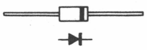
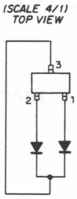
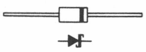
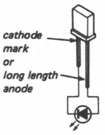
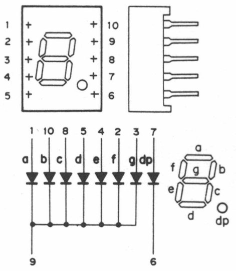
1S2837	B-2
2SA1005	B-2
2SA1175	B-2
2SA1244LB	B-2
2SC1623	B-2
2SC2668	B-2
2SC2785	B-2
2SC3074LB	B-2
2SJ122	B-2
2SK209	B-2
AD580MH	B-3
CXK58257AM-12L	B-3
CXK5864BM-10L	B-3
ERB81-004	B-2
ERC81-004	B-2
GL9PG2	B-2
HD46508PA	B-4
HM63021P-34	B-4
LA-301ML	B-2
LA-301VL	B-2
LD-603DU	B-2
M54517P	B-5
MB8421-90LP	B-5
MB89352PFQ	B-5
MBM27C256A-20TV	B-6
MC14025BCP	B-6
MC14050BCP	B-6
MC14490F	B-6
MC14490P	B-6
MC74HC4511F	B-6
NJM386BS	B-7
RC4558M	B-7
SN7407N	B-7
SN74HC00ANS	B-7
SN74HC02ANS	B-7
SN74HC04ANS	B-7
SN74HC133N	B-7
SN74HC138ANS	B-7
SN74HC163ANS	B-8
SN74HC166ANS	B-8
SN74HC175ANS	B-8
SN74HC244AN	B-8
SN74HC245AN	B-8
SN74HC32ANS	B-9
SN74HC374ANS	B-9
SN74HC74ANS	B-9
SN74HC86ANS	B-9
TC4025BP	B-6
TC4050BP	B-6
TC40H000F	B-9
TC40H002F	B-9
TC40H004F	B-9
TC40H008F	B-9
TC40H042F	B-10
TC40H074F	B-10
TC40H138F	B-10
TC40H139F	B-10
TC40H148F	B-10
TC40H174F	B-10
TC40H175F	B-11
TC40H244F	B-8
TC40H374F	B-11
TC40H393F	B-11
TC74HC123AP	B-11
TC74HC697AP	B-11
TL1451ACNS	B-12
TL7705CP-B	B-12
TMPZ84C015AF-6	B-12
TMPZ84C10AF	B-14
U05G	B-2
UPC339C	B-14
UPC4062G2	B-14
UPC4064G	B-14
UPD72030G	B-15

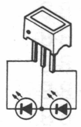

1S1555

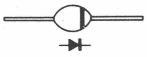

(SCALE 4/1)
TOP VIEW
3
2
1
1S2837

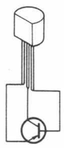

ERB81-004
ERC81-004

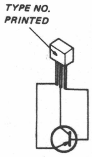

cathode
mark
or
long length
anode
GL9PG2 ; GREEN


1
2
3
4
5
10
9
8
7
6
1 10 8 5 4 2 3 7
a b c d e f g dp
a
f g b
e c
d dp
9
6
LA-301ML ; GREEN
LA-301VL ; RED


LD-603DU ; ORANGE


U05G


2SA1005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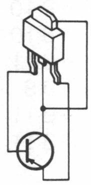
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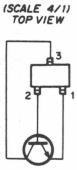
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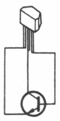
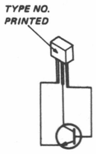
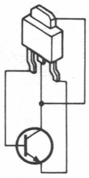
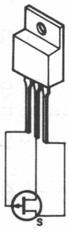
TOP VIEW
3
2
1
2SC1623

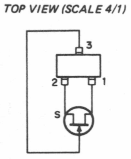

2SC2668


TYPE NO.
PRINTED
2SC2785


2SC3074LB

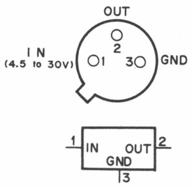


2SJ122


TOP VIEW (SCALE 4/1)
3
2
1
S
2SK209

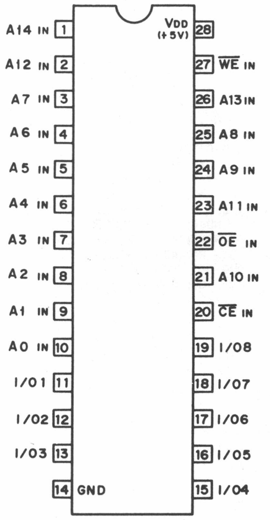
AD580MH (ANALOG DEVICES)

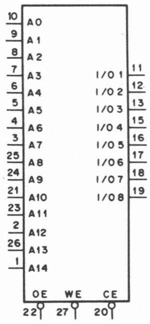
REFERENCE VOLTAGE GENERATOR (2.5V)
– BOTTOM VIEW –


OUT
2
I N
(4.5 to 30V)
1
3
GND
IN
OUT
GND

CXK58257AM-12L (SONY) FLAT PACKAGE

C-MOS 256K (32768x8)-BIT STATIC RAM
– TOP VIEW –

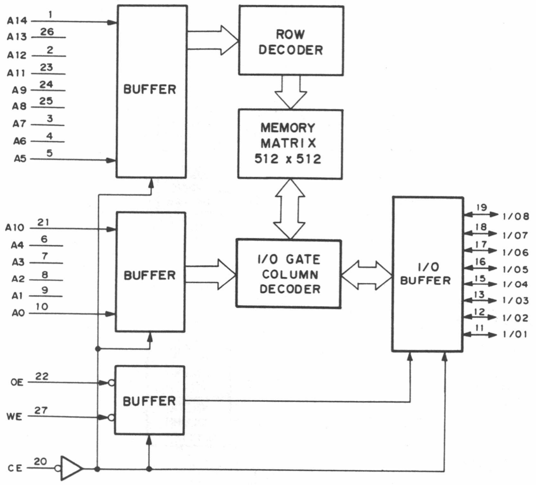

A14 IN 1
A12 IN 2
A7 IN 3
A6 IN 4
A5 IN 5
A4 IN 6
A3 IN 7
A2 IN 8
A1 IN 9
A0 IN 10
I/O1 11
I/O2 12
I/O3 13
14 GND
VDD (+5V) 28
27 WE IN
26 A13 IN
25 A8 IN
24 A9 IN
23 A11 IN
22 OE IN
21 A10 IN
20 CE IN
19 I/O8
18 I/O7
17 I/O6
16 I/O5
15 I/O4


A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
I/O1
I/O2
I/O3
I/O4
I/O5
I/O6
I/O7
I/O8
OE
WE
CE

A0 – A14 : ADDRESS INPUTS
CE : CHIP ENABLE INPUT
I/O1 – I/O8 : DATA INPUTS/OUTPUTS
OE : OUTPUT ENABLE INPUT
WE : WRITE ENABLE INPUT

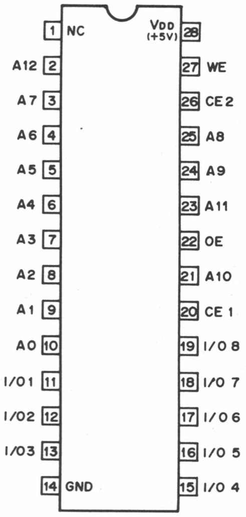
CE	OE	WE	MODE	I/O TERMINAL
1	×	×	NOT SELECT	HIGH IMPEDANCE
0	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	0	1	READ	OUTPUT DATA
0	×	0	WRITE	INPUT DATA

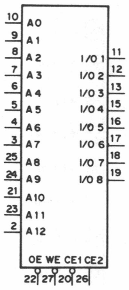
0 : LOW LEVEL
1 : HIGH LEVEL
×: DON'T CARE


A14
A13
A12
A11
A9
A8
A7
A6
A5
BUFFER
ROW DECODER
MEMORY MATRIX 512 x 512
A10
A4
A3
A2
A1
A0
BUFFER
I/O GATE COLUMN DECODER
I/O BUFFER
I/O8
I/O7
I/O6
I/O5
I/O4
I/O3
I/O2
I/O1
OE
WE
BUFFER
CE

CXK5864BM-10L (SONY) FLAT PACKAGE

C-MOS 64K (8192x8)-BIT STATIC RAM
– TOP VIEW –

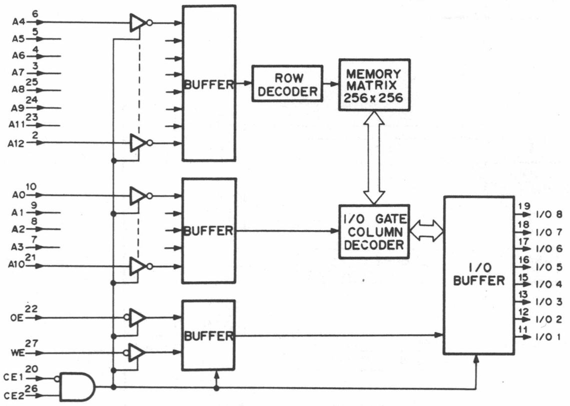

1 NC
A12 2
A7 3
A6 4
A5 5
A4 6
A3 7
A2 8
A1 9
A0 10
I/O1 11
I/O2 12
I/O3 13
14 GND
VDD (+5V) 28
27 WE
26 CE2
25 A8
24 A9
23 A11
22 OE
21 A10
20 CE1
19 I/O8
18 I/O7
17 I/O6
16 I/O5
15 I/O4


A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
I/O1
I/O2
I/O3
I/O4
I/O5
I/O6
I/O7
I/O8
OE WE CE1 CE2

A0-A12 ; ADDRESS INPUT
CE1, CE2 ; CHIP ENABLE INPUT
I/O1-I/O8 ; DATA INPUT/OUTPUT
OE ; OUTPUT ENABLE INPUT
WE ; WRITE ENABLE INPUT

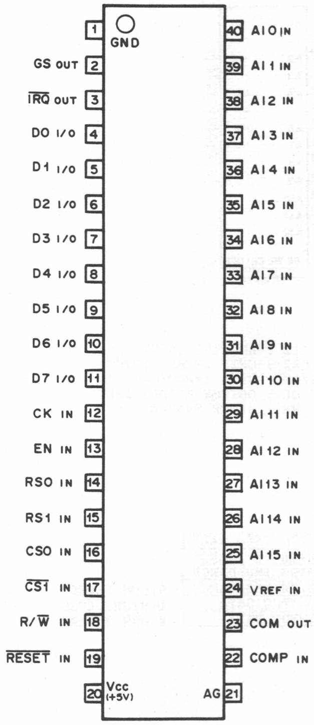
CE1	CE2	OE	WE	MODE	I/O TERMINAL
1	X	X	X	NOT SELECT	HIGH IMPEDANCE
X	0	X	X	NOT SELECT	HIGH IMPEDANCE
0	1	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	1	0	1	READ	OUTPUT DATA
0	1	X	0	WRITE	INPUT DATA

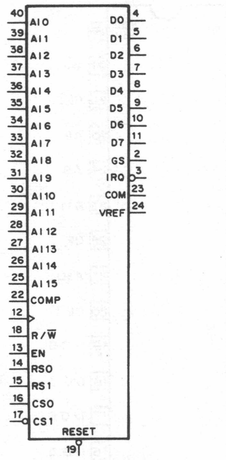
0;LOW LEVEL
1;HIGH LEVEL
X;DON'T CARE


A4
A5
A6
A7
A8
A9
A11
A12
BUFFER
ROW DECODER
MEMORY MATRIX 256x256
A0
A1
A2
A3
A10
BUFFER
I/O GATE COLUMN DECODER
I/O BUFFER
I/O 8
I/O 7
I/O 6
I/O 5
I/O 4
I/O 3
I/O 2
I/O 1
OE
WE
BUFFER
CE1
CE2

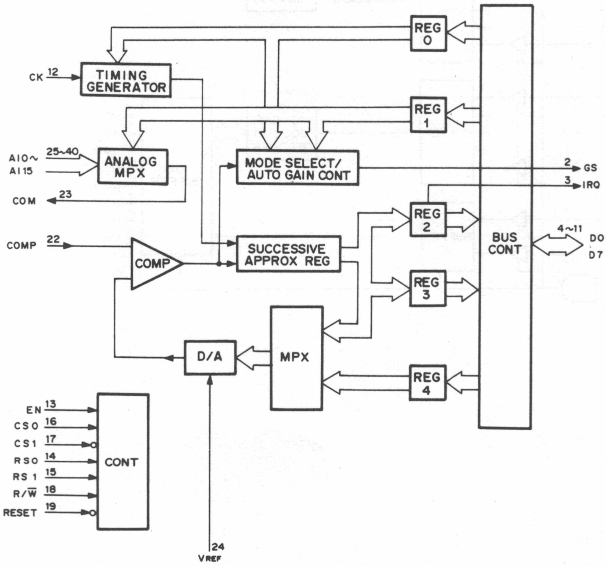
HD46508PA (HITACHI) (ACCESS TIME = 1uS)

ANALOG DATA ACQUISITION UNIT
– TOP VIEW –


1 GND
GS OUT 2
IRQ OUT 3
D0 I/O 4
D1 I/O 5
D2 I/O 6
D3 I/O 7
D4 I/O 8
D5 I/O 9
D6 I/O 10
D7 I/O 11
CK IN 12
EN IN 13
RS0 IN 14
RS1 IN 15
CS0 IN 16
CS1 IN 17
R/W IN 18
RESET IN 19
20 Vcc (+5V)
AG 21
40 AI0 IN
39 AI1 IN
38 AI2 IN
37 AI3 IN
36 AI4 IN
35 AI5 IN
34 AI6 IN
33 AI7 IN
32 AI8 IN
31 AI9 IN
30 AI10 IN
29 AI11 IN
28 AI12 IN
27 AI13 IN
26 AI14 IN
25 AI15 IN
24 VREF IN
23 COM OUT
22 COMP IN

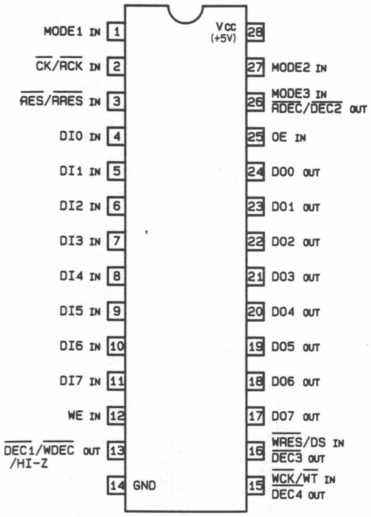

AI0 … AI15
COMP
R/W
EN
RS0
RS1
CS0
CS1
RESET
D0 … D7
GS
IRQ
COM
VREF

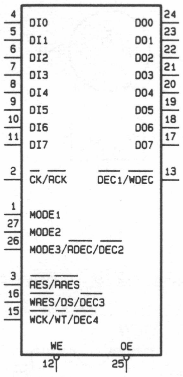
GS ; GAIN SELECT
IRQ ; INTERRUPT REQUEST
D0～D7 ; I/O DATA BUS
CK ; CLOCK
EN ; ENABLE
RS0,1 ; REGISTER SELECT
CS0,1 ; CHIP SELECT
R/$\overline{\text{W}}$; READ WRITE ENABLE
COMP ; COMPARATOR INPUT
COM ; MULTIPLEXER COMMON
AI0～15 ; ANALOG INPUT


CK 12
TIMING GENERATOR
REG 0
REG 1
REG 2
REG 3
REG 4
AI0～AI15 25～40
ANALOG MPX
COM 23
COMP 22
COMP
MODE SELECT/ AUTO GAIN CONT
2 GS
3 IRQ
SUCCESSIVE APPROX REG
BUS CONT
4～11 D0～D7
D/A
MPX
EN 13
CS0 16
CS1 17
RS0 14
RS1 15
R/W 18
RESET 19
CONT
24 VREF

HM63021P-34 (HITACHI)

2048 WORDx8-BIT LINE MEMORY
– TOP VIEW –


MODE1 IN 1
CK/RCK IN 2
RES/RRES IN 3
DI0 IN 4
DI1 IN 5
DI2 IN 6
DI3 IN 7
DI4 IN 8
DI5 IN 9
DI6 IN 10
DI7 IN 11
WE IN 12
DEC1/WDEC /HI-Z OUT 13
14 GND
Vcc (+5V) 28
27 MODE2 IN
26 MODE3 IN RDEC/DEC2 OUT
25 OE IN
24 DO0 OUT
23 DO1 OUT
22 DO2 OUT
21 DO3 OUT
20 DO4 OUT
19 DO5 OUT
18 DO6 OUT
17 DO7 OUT
16 WRES/DS IN DEC3 OUT
15 WCK/WT IN DEC4 OUT

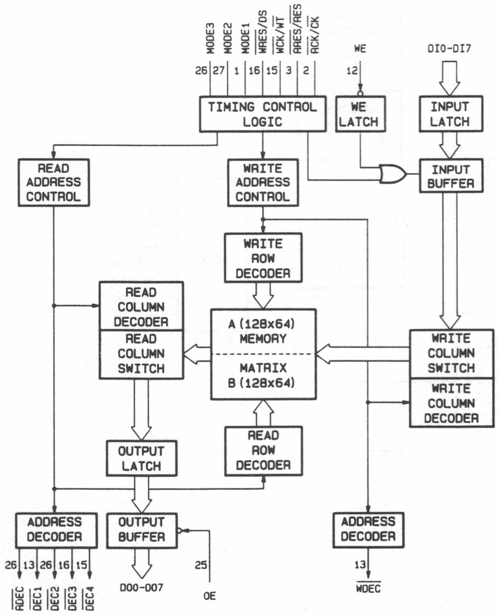

4 DI0
5 DI1
6 DI2
7 DI3
8 DI4
9 DI5
10 DI6
11 DI7
DO0 24
DO1 23
DO2 22
DO3 21
DO4 20
DO5 19
DO6 18
DO7 17
2 CK/RCK
DEC1/WDEC 13
1 MODE1
27 MODE2
26 MODE3/RDEC/DEC2
3 RES/RRES
16 WRES/DS/DEC3
15 WCK/WT/DEC4
WE 12
OE 25

MODE1, 2, 3; MODE SELECT INPUTS
$\overline{\text{RCK}}$; READ CLOCK INPUT
$\overline{\text{WCK}}$; WRITE CLOCK INPUT
$\overline{\text{CK}}$; CLOCK INPUT
$\overline{\text{RRES}}$; READ RESET INPUT
$\overline{\text{RES}}$; RESET INPUT
DI0–DI7; DATA INPUTS
WE; WRITE ENABLE INPUT
HI-Z; HIGH IMPEDANCE
WT; WRITE TIMING INPUT
DEC1, 2, 3, 4; DECODE PULSE OUTPUTS
WDEC; WRITE DECODE PULSE OUTPUT
RDEC; READ DECODE PULSE OUTPUT
DS; DELAY SELECT INPUT
DO0–DO7; DATA OUTPUTS
OE; OUTPUT ENABLE INPUT

MODE1	MODE2	MODE3	MODE
1	1	1	TIME BASE COMPRESSING /EXPANDING
1	1	0	DOUBLE SPEED EXCHANGE
1	0	*	TBC
0	1	*	1H/2H DELAY
0	0	*	DELAY LINE

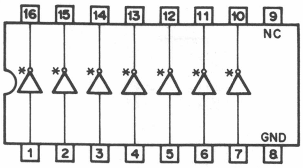
0; LOW LEVEL
1; HIGH LEVEL
*; DEC OUTPUT SIGNAL

PIN NO.	MODE				
	TIME BASE COMPRESSING /EXPANDING	DOUBLE SPEED EXCHANGE	TBC	1H/2H DELAY	DELAY LINE
1	MODE1				
2	$\overline{\text{RCK}}$			$\overline{\text{CK}}$	
3	$\overline{\text{RRES}}$			$\overline{\text{RES}}$	
4–11	DI0–DI7				
12	$\overline{\text{WE}}$				
13	HI-Z		$\overline{\text{WDEC}}$	$\overline{\text{DEC1}}$	
15	$\overline{\text{WCK}}$			$\overline{\text{WT}}$	$\overline{\text{DEC4}}$
16	$\overline{\text{WRES}}$			DS	$\overline{\text{DEC3}}$
17–24	DO0–DO7				
25	$\overline{\text{OE}}$				
26	MODE3		$\overline{\text{RDEC}}$	$\overline{\text{DEC2}}$	
27	MODE2				


MODE3 26
MODE2 27
MODE1 1
WRES/DS 16
WCK/WT 15
RRES/RES 3
RCK/CK 2
WE 12
DI0-DI7
TIMING CONTROL LOGIC
WE LATCH
INPUT LATCH
READ ADDRESS CONTROL
WRITE ADDRESS CONTROL
INPUT BUFFER
WRITE ROW DECODER
READ COLUMN DECODER
READ COLUMN SWITCH
A (128x64) MEMORY
MATRIX B (128x64)
WRITE COLUMN SWITCH
WRITE COLUMN DECODER
OUTPUT LATCH
READ ROW DECODER
ADDRESS DECODER
OUTPUT BUFFER
ADDRESS DECODER
26 RDEC
13 DEC1
26 DEC2
16 DEC3
15 DEC4
DO0–DO7
25 OE
13 WDEC

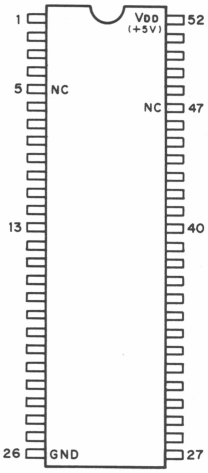
M54517P (MITSUBISHI)

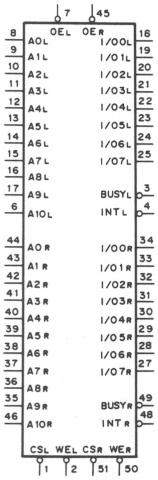
INVERTER WITH OPEN-COLLECTOR
(DARLINGTON-CONNECTED
TRANSISTOR ARRAY)
– TOP VIEW –

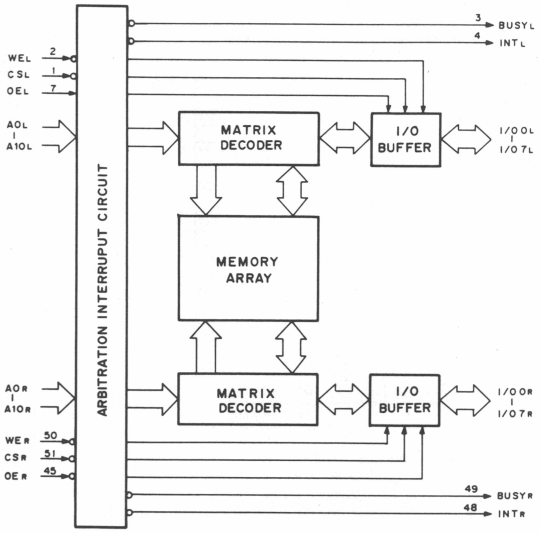

16
15
14
13
12
11
10
9
NC
GND
1
2
3
4
5
6
7
8

MB8421-90LP (FUJITSU) (ACCESS TIME = 90nS)

C-MOS 16384 (2Kx8) BIT DUAL PORT STATIC RAM
– TOP VIEW –


1
VDD (+5V)
52
5
NC
NC
47
13
40
26
GND
27

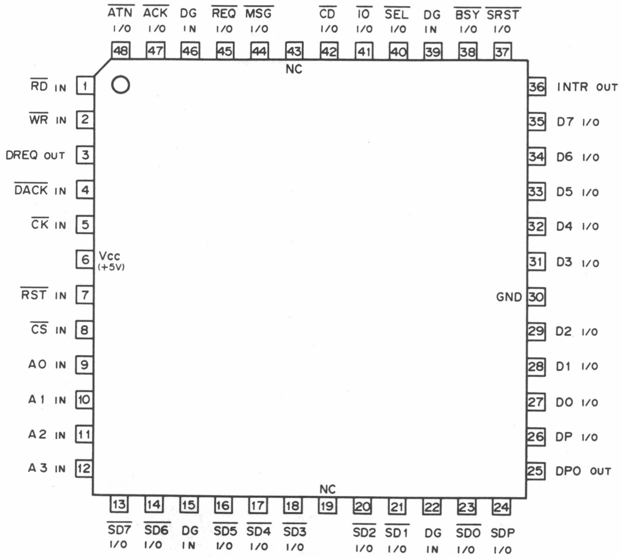

7
45
OEL
OER
8 A0L
9 A1L
10 A2L
11 A3L
12 A4L
13 A5L
14 A6L
15 A7L
16 A8L
17 A9L
6 A10L
I/O0L 16
I/O1L 19
I/O2L 20
I/O3L 21
I/O4L 22
I/O5L 23
I/O6L 24
I/O7L 25
BUSYL 3
INTL 4
44 A0R
43 A1R
42 A2R
41 A3R
40 A4R
39 A5R
38 A6R
37 A7R
36 A8R
35 A9R
46 A10R
I/O0R 34
I/O1R 33
I/O2R 32
I/O3R 31
I/O4R 30
I/O5R 29
I/O6R 28
I/O7R 27
BUSYR 49
INTR 48
CSL WEL CSR WER
1 2 51 50

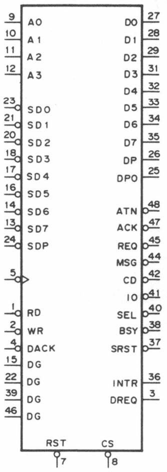

3 BUSYL
4 INTL
WEL 2
CSL 1
OEL 7
A0L
A10L
MATRIX DECODER
I/O BUFFER
I/O0L
I/O7L
MEMORY ARRAY
ARBITRATION INTERRUPT CIRCUIT
A0R
A10R
MATRIX DECODER
I/O BUFFER
I/O0R
I/O7R
WER 50
CSR 51
OER 45
49 BUSYR
48 INTR

A0L-A10L, A0R-A10R ; ADDRESS INPUTS
I/O0L-I/O70L, I/O0R-I/O7R ; DATA INPUTS/OUTPUTS
CSL, CSR ; CHIP SELECT INPUT
WEL, WER ; WRITE ENABLE INPUT
OEL, OER ; OUTPUT ENABLE INPUT
BUSYL, BUSYR ; BUSY OUTPUT
INTL, INTR ; INTERRUPT OUTPUT

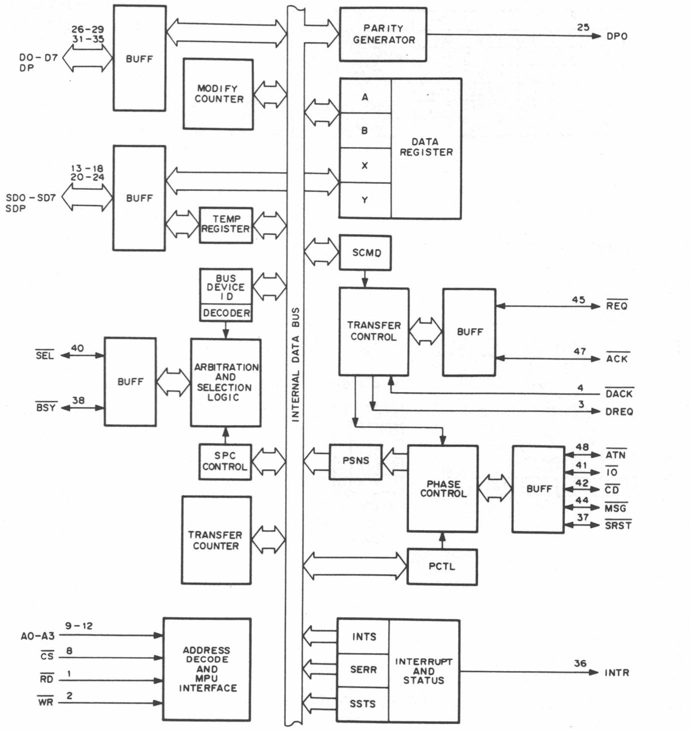
MB89352PFQ (FUJITSU) FLAT PACKAGE

C-MOS SCSI PROTOCOL CONTROLLER
– TOP VIEW –


ATN I/O 48
ACK I/O 47
DG IN 46
REQ I/O 45
MSG I/O 44
43 NC
CD I/O 42
IO I/O 41
SEL I/O 40
DG IN 39
BSY I/O 38
SRST I/O 37
RD IN 1
WR IN 2
DREQ OUT 3
DACK IN 4
CK IN 5
6 Vcc (+5V)
RST IN 7
CS IN 8
A0 IN 9
A1 IN 10
A2 IN 11
A3 IN 12
36 INTR OUT
35 D7 I/O
34 D6 I/O
33 D5 I/O
32 D4 I/O
31 D3 I/O
GND 30
29 D2 I/O
28 D1 I/O
27 D0 I/O
26 DP I/O
25 DPO OUT
13 SD7 I/O
14 SD6 I/O
15 DG IN
16 SD5 I/O
17 SD4 I/O
18 SD3 I/O
NC 19
20 SD2 I/O
21 SD1 I/O
22 DG IN
23 SD0 I/O
24 SDP I/O

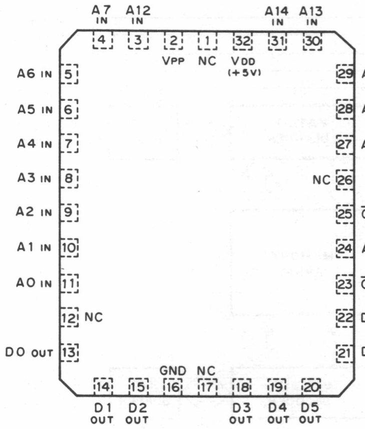

9 A0
10 A1
11 A2
12 A3
23 SD0
21 SD1
20 SD2
18 SD3
17 SD4
16 SD5
14 SD6
13 SD7
24 SDP
5
1 RD
2 WR
4 DACK
15 DG
22 DG
39 DG
46 DG
D0 27
D1 28
D2 29
D3 31
D4 32
D5 33
D6 34
D7 35
DP 26
DPO 25
ATN 48
ACK 47
REQ 45
MSG 44
CD 42
IO 41
SEL 40
BSY 38
SRST 37
INTR 36
DREQ 3
RST 7
CS 8

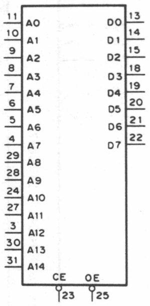
A0-A3 ; ADDRESS INPUTS
D0-D7 ; DATA INPUTS/OUTPUT
DP ; PARITY BIT INPUT
$\overline{\text{SD0}}$-$\overline{\text{SD7}}$; SCSI DATA INPUTS/OUTPUTS
$\overline{\text{SDP}}$; PARITY BIT INPUT
$\overline{\text{RST}}$; RESET INPUT
$\overline{\text{CS}}$; CHIP SELECT INPUT
$\overline{\text{RD}}$; READ INPUTS
$\overline{\text{WR}}$; WRITE INPUTS
INTR ; INTERRUPT OUTPUT
$\overline{\text{DACK}}$; DATA ACKNOWLEDGE INPUT
$\overline{\text{SRST}}$; SCSI RESET INPUT/OUTPUT
DREQ ; DATA REQUEST OUTPUT
DPO ; PARITY OUTPUT
$\overline{\text{SEL}}$; SCSI SELECT INPUT/OUTPUT
$\overline{\text{BSY}}$; BUSY INPUT/OUTPUT
$\overline{\text{IO}}$; DATA DIRECTION INPUT/OUTPUT
$\overline{\text{CD}}$; COMMAND INPUT/OUTPUT
$\overline{\text{MSG}}$; MESSAGE INPUT/OUTPUT
$\overline{\text{REQ}}$; REQUEST INPUT/OUTPUT
$\overline{\text{ACK}}$; ACKNOWLEDGE INPUT/OUTPUT
$\overline{\text{ATN}}$; ATTENTION CONDITION INPUT/OUTPUT
DG ; DRIVER GROUND


26-29
31-35
D0-D7
DP
BUFF
MODIFY COUNTER
13-18
20-24
SD0-SD7
SDP
BUFF
TEMP REGISTER
BUS DEVICE ID
DECODER
SEL 40
BSY 38
BUFF
ARBITRATION AND SELECTION LOGIC
SPC CONTROL
TRANSFER COUNTER
A0-A3 9-12
CS 8
RD 1
WR 2
ADDRESS DECODE AND MPU INTERFACE
INTERNAL DATA BUS
PARITY GENERATOR
25 DPO
A
B
X
Y
DATA REGISTER
SCMD
TRANSFER CONTROL
BUFF
45 REQ
47 ACK
4 DACK
3 DREQ
PSNS
PHASE CONTROL
BUFF
48 ATN
41 IO
42 CD
44 MSG
37 SRST
PCTL
INTS
SERR
SSTS
INTERRUPT AND STATUS
36 INTR

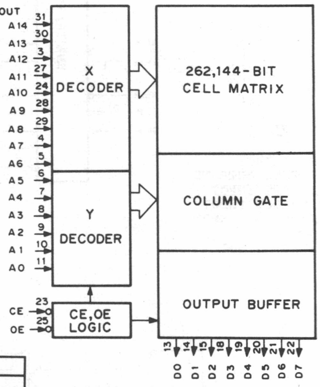
MBM27C256A-20TV (FUJITSU) (ACCESS TIME = 200nS)

C-MOS 256K (32Kx8)-BIT ERASABLE PROM WITH 3-STATE OUTPUTS
– TOP VIEW –


A7 IN
A12 IN
A14 IN
A13 IN
4
3
2
1
32
31
30
VPP
NC
VDD (+5V)
A6 IN 5
A5 IN 6
A4 IN 7
A3 IN 8
A2 IN 9
A1 IN 10
A0 IN 11
12 NC
D0 OUT 13
29 A8 IN
28 A9 IN
27 A11 IN
NC 26
25 OE IN
24 A10 IN
23 CE IN
22 D7 OUT
21 D6 OUT
GND
NC
14
15
16
17
18
19
20
D1 OUT
D2 OUT
D3 OUT
D4 OUT
D5 OUT


A0 11
A1 10
A2 9
A3 8
A4 7
A5 6
A6 5
A7 4
A8 29
A9 28
A10 24
A11 27
A12 3
A13 30
A14 31
D0 13
D1 14
D2 15
D3 18
D4 19
D5 20
D6 21
D7 22
CE 23
OE 25

A0 – A14 : ADDRESS INPUT
$\overline{\text{CE}}$: CHIP ENABLE INPUT
$\overline{\text{D0 – D7}}$: DATA OUTPUT
$\overline{\text{OE}}$: OUTPUT ENABLE INPUT
V_{PP} : PROGRAM POWER SUPPLY

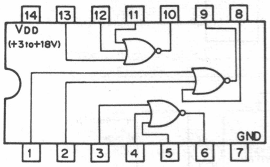

A14
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
X DECODER
Y DECODER
262,144-BIT CELL MATRIX
COLUMN GATE
OUTPUT BUFFER
CE
OE
CE,OE LOGIC
D0
D1
D2
D3
D4
D5
D6
D7

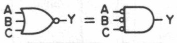
An	$\overline{\text{CE}}$	$\overline{\text{OE}}$	V_{PP}	Dn	FUNCTION
An	0	0	+ 5V	D_{OUT}	READ
An	0	1	+ 5V	HI-Z	OUTPUT DISABLE
X	1	X	+ 5V	HI-Z	STANDBY
An	0	1	+ 12.5V	D_{IN}	PGM
An	0	0	+ 12.5V	D_{OUT}	PGM VERIFY
X	1	1	+ 12.5V	HI-Z	PGM INH

0 : LOW LEVEL
1 : HIGH LEVEL
X: DON'T CARE
HI-Z : HIGH IMPEDANCE

MC14025BCP (MOTOROLA)
TC4025BP (TOSHIBA)

C-MOS 3-INPUT NOR GATE
– TOP VIEW –


14
13
12
11
10
9
8
VDD (+3to+18V)
GND
1
2
3
4
5
6
7



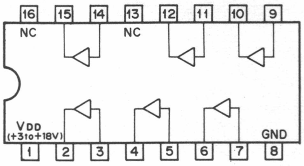
$Y = \overline{A+B+C} = \overline{A}\cdot\overline{B}\cdot\overline{C}$

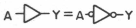
A	B	C	Y
0	0	0	1
X	X	1	0
X	1	X	0
1	X	X	0

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

MC14050BCP (MOTOROLA)
TC4050BP (TOSHIBA)

C-MOS NON-INVERTING TYPE BUFFER/CONVERTER
– TOP VIEW –


16
15
14
13
12
11
10
9
NC
NC
VDD (+3to+18V)
GND
1
2
3
4
5
6
7
8



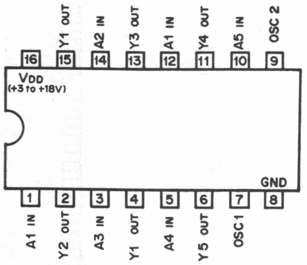
Y = A

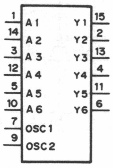
A	Y
0	0
1	1

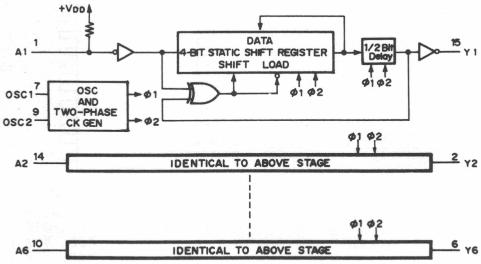
0 ; LOW LEVEL
1 ; HIGH LEVEL

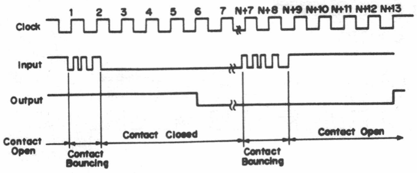
MC14490F (MOTOROLA) FLAT PACKAGE
MC14490P (MOTOROLA)

C-MOS HEX CONTACT BOUNCE ELIMINATOR
– TOP VIEW –


16
15 Y1 OUT
14 A2 IN
13 Y3 OUT
12 A1 IN
11 Y4 OUT
10 A5 IN
9 OSC 2
VDD (+3 to +18V)
GND
1 A1 IN
2 Y2 OUT
3 A3 IN
4 Y1 OUT
5 A4 IN
6 Y5 OUT
7 OSC 1
8

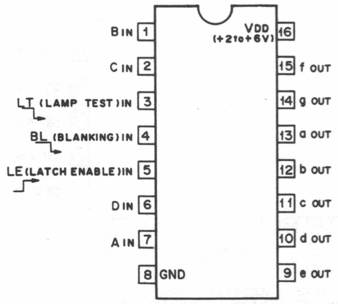

1 A1
14 A2
3 A3
12 A4
5 A5
10 A6
7 OSC1
9 OSC2
Y1 15
Y2 2
Y3 13
Y4 4
Y5 11
Y6 6

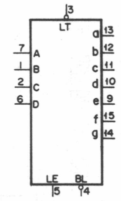

+VDD
A1 1
DATA
4-BIT STATIC SHIFT REGISTER
SHIFT LOAD
1/2 Bit Delay
15 Y1
OSC1 7
OSC2 9
OSC AND TWO-PHASE CK GEN
φ1
φ2
φ1 φ2
A2 14
IDENTICAL TO ABOVE STAGE
2 Y2
A6 10
IDENTICAL TO ABOVE STAGE
6 Y6

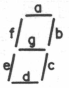

Clock
1 2 3 4 5 6 7 N+7 N+8 N+9 N+10 N+11 N+12 N+13
Input
Output
Contact Open
Contact Bouncing
Contact Closed
Contact Bouncing
Contact Open

MC74HC4511F (MOTOROLA) FLAT PACKAGE

C-MOS BCD TO 7 SEGMENT LATCH/DECODER/DRIVER
– TOP VIEW –


B IN 1
C IN 2
LT (LAMP TEST) IN 3
BL (BLANKING) IN 4
LE (LATCH ENABLE) IN 5
D IN 6
A IN 7
8 GND
VDD (+2to+6V) 16
15 f OUT
14 g OUT
13 a OUT
12 b OUT
11 c OUT
10 d OUT
9 e OUT


3
LT
7 A
1 B
2 C
6 D
a 13
b 12
c 11
d 10
e 9
f 15
g 14
LE BL
5 4



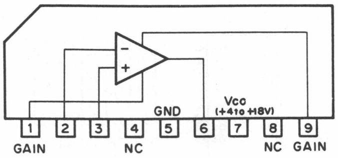
INPUTS							OUTPUTS							DISPLAY
LE	BL	LT	D	C	B	A	a	b	c	d	e	f	g	
X	X	0	X	X	X	X	1	1	1	1	1	1	1	8
X	0	1	X	X	X	X	0	0	0	0	0	0	0	BLANK
0	1	1	0	0	0	0	1	1	1	1	1	1	0	0
0	1	1	0	0	0	1	0	1	1	0	0	0	0	1
0	1	1	0	0	1	0	1	1	0	1	1	0	1	2
0	1	1	0	0	1	1	1	1	1	1	0	0	1	3
0	1	1	0	1	0	0	0	1	1	0	0	1	1	4
0	1	1	0	1	0	1	1	0	1	1	0	1	1	5
0	1	1	0	1	1	0	0	0	1	1	1	1	1	6
0	1	1	0	1	1	1	1	1	1	0	0	0	0	7
0	1	1	1	0	0	0	1	1	1	1	1	1	1	8
0	1	1	1	0	0	1	1	1	1	0	0	1	1	9
0	1	1	1	0	1	0	0	0	0	0	0	0	0	BLANK
0	1	1	1	0	1	1	0	0	0	0	0	0	0	BLANK
0	1	1	1	1	0	0	0	0	0	0	0	0	0	BLANK
0	1	1	1	1	0	1	0	0	0	0	0	0	0	BLANK
0	1	1	1	1	1	0	0	0	0	0	0	0	0	BLANK
0	1	1	1	1	1	1	0	0	0	0	0	0	0	BLANK
1	1	1	X	X	X	X	★							★

0; LOW
1; HIGH
X; LOW OR HIGH

★; DEPEND UPON THE BCD CODE PREVIOUSLY APPLIED WHEN LE = 0.

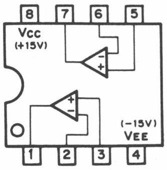
NJM386BS (JRC)

AUDIO POWER AMPLIFIER
– SIDE VIEW –


1
2
3
4
5
6
7
8
9
GND
Vcc (+4 to +18V)
GAIN
NC
NC
GAIN

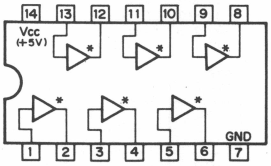
RC4558M (RAYTHEON) FLAT PACKAGE

DUAL OPERATIONAL AMPLIFIER
– TOP VIEW –


8
7
6
5
Vcc (+15V)
(–15V) VEE
1
2
3
4

SN7407N (TI)

TTL BUFFER/DRIVER WITH OPEN-COLLECTOR
– TOP VIEW –


14
13
12
11
10
9
8
Vcc (+5V)
GND
1
2
3
4
5
6
7

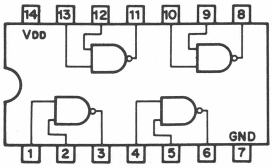
Y = A

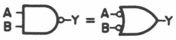
A	Y
0	0
1	1

0 ; LOW LEVEL
1 ; HIGH LEVEL
* ; OPEN COLLECTOR

SN74HC00ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT NAND GATES
– TOP VIEW –


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



Y = $\overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

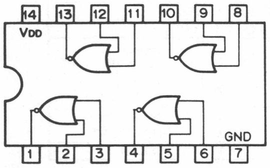
0 ; LOW LEVEL
1 ; HIGH LEVEL

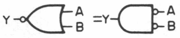
NOTE :

TYPE	VDD
TC74AC00 TYPE	+2 to +5.5V
MC74HCT00N	+5V
74ACT00 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC02ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT NOR GATES
– TOP VIEW –


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



Y = $\overline{A + B} = \overline{A} \cdot \overline{B}$

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

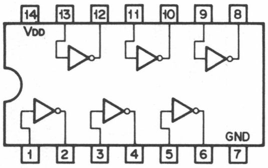
0 : LOW LEVEL
1 ; HIGH LEVEL

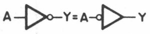
NOTE :

TYPE	VDD
TC74AC02F	+2 to +5.5V
74ACT02SJ	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC04ANS (TI) FLAT PACKAGE

C-MOS HEX INVERTERS
– TOP VIEW –


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



Y = $\overline{A}$

A	Y
0	1
1	0

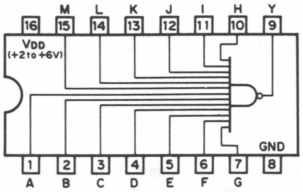
0 : LOW LEVEL
1 : HIGH LEVEL

NOTE :

TYPE	VDD
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC133N (TI)

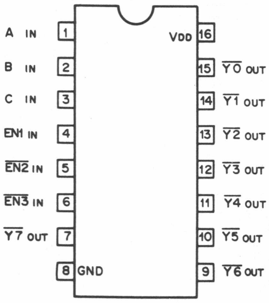
C-MOS 13-INPUT NAND GATE
– TOP VIEW –

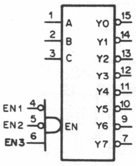

M
L
K
J
I
H
Y
16
15
14
13
12
11
10
9
VDD (+2 to +6V)
GND
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G

Y = $\overline{A \cdot B \cdot C \cdot D \cdot E \cdot F \cdot G \cdot H \cdot I \cdot J \cdot K \cdot L \cdot M}$

SN74HC138ANS (TI) FLAT PACKAGE

C-MOS 3-TO-8 LINE DECODER/DEMULTIPLEXER
– TOP VIEW –


A IN
B IN
C IN
EN1 IN
EN2 IN
EN3 IN
Y7 OUT
1
2
3
4
5
6
7
8
GND
VDD
16
15
14
13
12
11
10
9
Y0 OUT
Y1 OUT
Y2 OUT
Y3 OUT
Y4 OUT
Y5 OUT
Y6 OUT


1
2
3
A
B
C
EN1
EN2
EN3
4
5
6
EN
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
15
14
13
12
11
10
9
7

INPUTS				OUTPUTS							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

EN = $\overline{EN1} \cdot \overline{EN2} \cdot EN3$

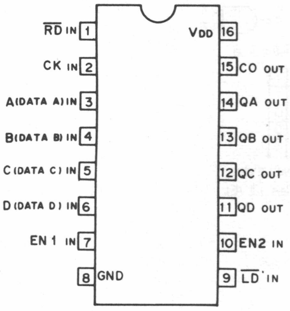
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

NOTE :

TYPE	VDD
74HCT138 TYPE	+5V
74ACT138 TYPE	+4.5 to +5.5V
TC74AC138 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC163ANS (TI) FLAT PACKAGE

C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
– TOP VIEW –

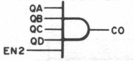


$\overline{RD}$ IN 1
CK IN 2
A(DATA A) IN 3
B(DATA B) IN 4
C(DATA C) IN 5
D(DATA D) IN 6
EN 1 IN 7
8 GND
VDD 16
15 CO OUT
14 QA OUT
13 QB OUT
12 QC OUT
11 QD OUT
10 EN2 IN
9 $\overline{LD}$ IN

MODE SELECTION

CONTROL INPUTS				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

CARRY OUTPUT "CO"

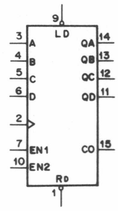


QA
QB
QC
QD
EN2
CO

CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

NOTE :

TYPE	VDD
74ACT163 TYPE	+4.5 to +5.5V
TC74AC163 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V



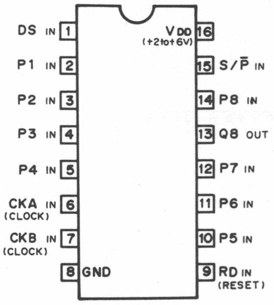
9
LD
3 A
4 B
5 C
6 D
2
7 EN1
10 EN2
RD
1
QA 14
QB 13
QC 12
QD 11
CO 15

COUNT SEQUENCE

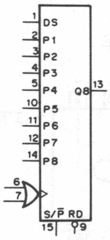
COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

SN74HC166ANS (TI) FLAT PACKAGE

C-MOS 8-BIT SHIFT REGISTER
– TOP VIEW –

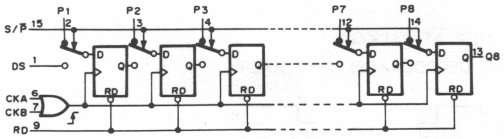


DS IN 1
P1 IN 2
P2 IN 3
P3 IN 4
P4 IN 5
CKA IN 6 (CLOCK)
CKB IN 7 (CLOCK)
8 GND
VDD (+2to+6V) 16
15 S/$\overline{P}$ IN
14 P8 IN
13 Q8 OUT
12 P7 IN
11 P6 IN
10 P5 IN
9 RD IN (RESET)



1 DS
2 P1
3 P2
4 P3
5 P4
10 P5
11 P6
12 P7
14 P8
Q8 13
6
7
S/$\overline{P}$ RD
15
9

DS : DATA SERIAL INPUT
P1 - P8 : DATA PARALLEL INPUT
CK : CLOCK



S/$\overline{P}$ 15
P1 2
P2 3
P3 4
P7 12
P8 14
DS 1
CKA 6
CKB 7
RD 9
D
Q
RD
13 Q8

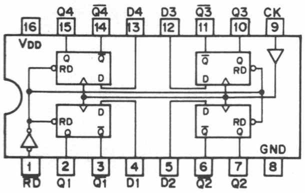
CKA	CKB	CK
0	0	0
X	1	1
1	X	1
1	↑	1
↑	1	1
0	↑	↑
↑	0	↑

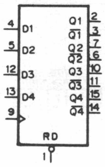
INPUT					OUTPUT
RD	S/$\overline{P}$	CK	DS	P1-P8	Q8
0	X	X	X	X	0
1	X	0	X	X	$Q8_0$
1	0	↑	X	1-8	8
1	1	↑	1	X	$Q7_n$
1	1	↑	0	X	$Q7_n$
1	X	↑	X	X	$Q8_0$

0 ;LOW LEVEL
1 ;HIGH LEVEL
X ;DON'T CARE

SN74HC175ANS (TI) FLAT PACKAGE

C-MOS QUAD D-TYPE FLIP-FLOPS WITH RESET
– TOP VIEW –





4 D1
5 D2
12 D3
13 D4
9
RD
1
Q1 2
$\overline{Q1}$ 3
Q2 7
$\overline{Q2}$ 6
Q3 10
$\overline{Q3}$ 11
Q4 15
$\overline{Q4}$ 14

RD	CK	D	Q	$\overline{Q}$
0	X	X	0	1
1	↑	1	1	0
1	↑	0	0	1
1	0	X	Q_0	$\overline{Q}_0$

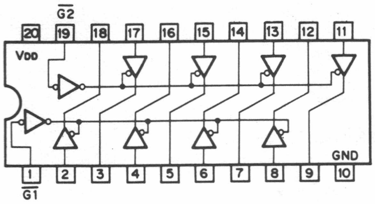
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
Q_0 ; NO CHANGE
$\overline{Q}_0$; NO CHANGE

NOTE:

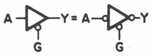
TYPE	VDD
TC74AC175F	+2 to +5.5V
74ACT175 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC244AN (TI)
TC40H244F (TOSHIBA) FLAT PACKAGE

C-MOS BUS BUFFER WITH 3-STATE OUTPUTS
– TOP VIEW –

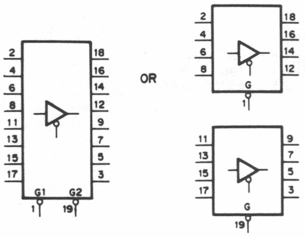


$\overline{G2}$
20
19
18
17
16
15
14
13
12
11
VDD
GND
1
2
3
4
5
6
7
8
9
10
$\overline{G1}$



G	A	Y
0	0	0
0	1	1
1	X	HI-Z

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH IMPEDANCE



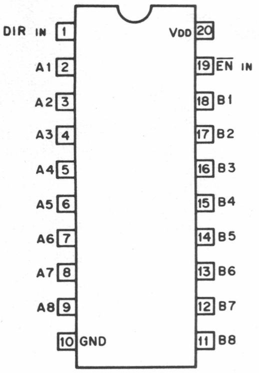
2
4
6
8
11
13
15
17
18
16
14
12
9
7
5
3
G1
G2
1
19
OR
G
1
19

NOTE :

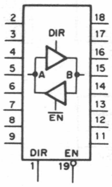
TYPE	VDD
AC HC 40H	+2 to +6V
ACT HCT	+5V

SN74HC245AN (TI)

C-MOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS
– TOP VIEW –



DIR IN 1
A1 2
A2 3
A3 4
A4 5
A5 6
A6 7
A7 8
A8 9
10 GND
VDD 20
19 $\overline{EN}$ IN
18 B1
17 B2
16 B3
15 B4
14 B5
13 B6
12 B7
11 B8



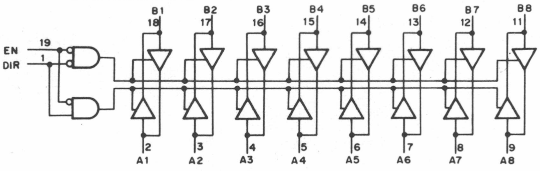
2
3
4
5
6
7
8
9
DIR
A
B
$\overline{EN}$
18
17
16
15
14
13
12
11
DIR
EN
1
19

EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI - Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

NOTE :

TYPE	VDD
AC HC	+2 to +6V
ACT HCT	+5V
TC74AC245F TC74AC245P	+2 to +5.5V

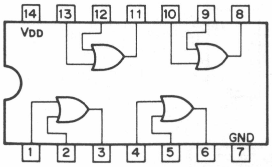


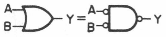
B1 18
B2 17
B3 16
B4 15
B5 14
B6 13
B7 12
B8 11
EN 19
DIR 1
2 A1
3 A2
4 A3
5 A4
6 A5
7 A6
8 A7
9 A8

SN74HC32ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT OR GATES

– TOP VIEW –


VDD
GND
14 13 12 11 10 9 8
1 2 3 4 5 6 7



Y = A + B = $\overline{\overline{A}\cdot\overline{B}}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0:LOW LEVEL
1:HIGH LEVEL

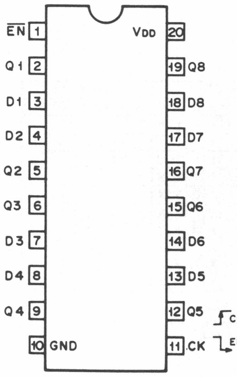
NOTE :

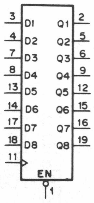
TYPE	VDD
TC74AC32 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC374ANS (TI) FLAT PACKAGE

C-MOS 3-STATE OCTAL D-TYPE FLIP-FLOP

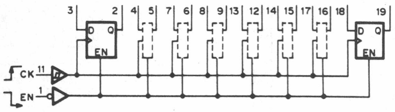
– TOP VIEW –


EN 1
Q1 2
D1 3
D2 4
Q2 5
Q3 6
D3 7
D4 8
Q4 9
10 GND
VDD 20
19 Q8
18 D8
17 D7
16 Q7
15 Q6
14 D6
13 D5
12 Q5
11 CK


D1 D2 D3 D4 D5 D6 D7 D8
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
EN
3 4 7 8 13 14 17 18 11
2 5 6 9 12 15 16 19 1

INPUTS			OUT
EN	D	CK	Q
0	1	↑	1
0	0	↑	0
0	X	0	Qo
1	X	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z;HIGH IMPEDANCE


3 2 4 5 7 6 8 9 13 12 14 15 17 16 18 19
D Q EN
CK 11
EN 1

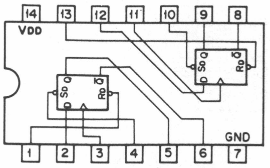
NOTE :

TYPE	VDD
74AC/74HC	+2 to +6V
74ACT/74HCT	+5V

SN74HC74ANS (TI) FLAT PACKAGE

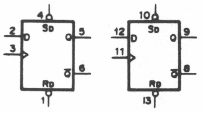
C-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET／RESET

– TOP VIEW –


VDD
GND
14 13 12 11 10 9 8
1 2 3 4 5 6 7
SD RD D Q

INPUTS				OUTPUTS	
$\overline{SD}$	$\overline{RD}$	CK	D	Qn+1	$\overline{Qn+1}$
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	1	1
1	1	↑	1	1	0
1	1	↑	0	0	1
1	1	0	X	Qn	$\overline{Qn}$

0;LOW LEVEL
1;HIGH LEVEL
X;DON'T CARE


4 2 3 5 6 1 SD RD
10 12 11 9 8 13 SD RD

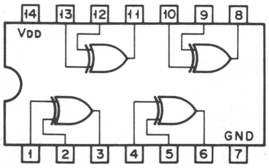
NOTE :

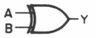
TYPE	VDD
TC74HCT74AF	+5V
TC74AC74 TYPE	+2 to +5.5V
74ACT74 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC86ANS (TI) FLAT PACKAGE

C-MOS QUAD EXCLUSIVE OR GATES

– TOP VIEW –


VDD
GND
14 13 12 11 10 9 8
1 2 3 4 5 6 7



Y = $\overline{A}\cdot B + A\cdot\overline{B}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0;LOW LEVEL
1;HIGH LEVEL

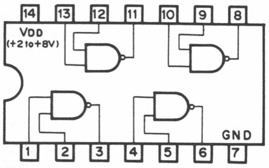
NOTE :

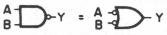
TYPE	VDD
TC74AC86 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

TC40H000F (TOSHIBA) FLAT PACKAGE

C-MOS 2-INPUT NAND GATE

– TOP VIEW –


VDD (+2 to +8V)
GND
14 13 12 11 10 9 8
1 2 3 4 5 6 7



Y = $\overline{A\cdot B} = \overline{A} + \overline{B}$

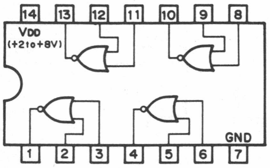
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

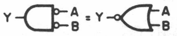
0; LOW LEVEL
1; HIGH LEVEL

TC40H002F (TOSHIBA) FLAT PACKAGE

C-MOS 2-INPUT NOR GATE

– TOP VIEW –


VDD (+2 to +8V)
GND
14 13 12 11 10 9 8
1 2 3 4 5 6 7



Y = $\overline{A+B}$

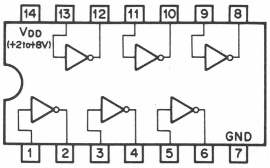
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

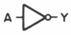
0:LOW LEVEL
1:HIGH LEVEL

TC40H004F (TOSHIBA) FLAT PACKAGE

C-MOS INVERTER

– TOP VIEW –


VDD (+2 to +8V)
GND
14 13 12 11 10 9 8
1 2 3 4 5 6 7



Y = $\overline{A}$

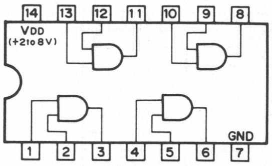
A	Y
0	1
1	0

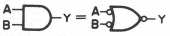
0; LOW LEVEL
1; HIGH LEVEL

TC40H008F (TOSHIBA) FLAT PACKAGE

C-MOS 2-INPUT POSITIVE-AND GATE

– TOP VIEW –


VDD (+2 to 8V)
GND
14 13 12 11 10 9 8
1 2 3 4 5 6 7



Y = A · B = $\overline{\overline{A}+\overline{B}}$

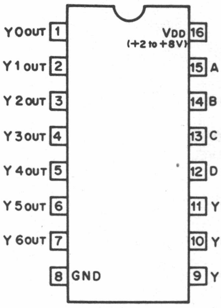
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

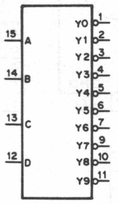
0; LOW LEVEL
1; HIGH LEVEL

TC40H042F (TOSHIBA) FLAT PACKAGE

C-MOS BCD-TO-DECIMAL DECODER/DRIVER

– TOP VIEW –


Y0 OUT 1
Y1 OUT 2
Y2 OUT 3
Y3 OUT 4
Y4 OUT 5
Y5 OUT 6
Y6 OUT 7
8 GND
VDD (+2 to +8V) 16
15 A IN
14 B IN
13 C IN
12 D IN
11 Y9 OUT
10 Y8 OUT
9 Y7 OUT


15 A
14 B
13 C
12 D
Y0 1
Y1 2
Y2 3
Y3 4
Y4 5
Y5 6
Y6 7
Y7 9
Y8 10
Y9 11

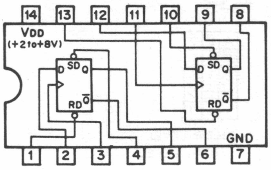
STATE	BCD INPUTS				DECIMAL OUTPUTS									
	D	C	B	A	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
1	0	0	0	1	1	0	1	1	1	1	1	1	1	1
2	0	0	1	0	1	1	0	1	1	1	1	1	1	1
3	0	0	1	1	1	1	1	0	1	1	1	1	1	1
4	0	1	0	0	1	1	1	1	0	1	1	1	1	1
5	0	1	0	1	1	1	1	1	1	0	1	1	1	1
6	0	1	1	0	1	1	1	1	1	1	0	1	1	1
7	0	1	1	1	1	1	1	1	1	1	1	0	1	1
8	1	0	0	0	1	1	1	1	1	1	1	1	0	1
9	1	0	0	1	1	1	1	1	1	1	1	1	1	0
10 ~ 15	1	X	1	X	1	1	1	1	1	1	1	1	1	1
	1	1	X	X	1	1	1	1	1	1	1	1	1	1

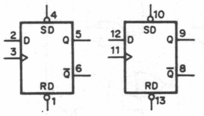
X : DON'T CARE
1 : HIGH LEVEL
0 : LOW LEVEL

TC40H074F (TOSHIBA) FLAT PACKAGE

C-MOS HIGH SPEED D-TYPE FLIP-FLOP WITH DIRECT SET/RESET

– TOP VIEW –


14
13
12
11
10
9
8
VDD (+2 to +8V)
D SD Q
RD Q̄
GND
1
2
3
4
5
6
7


4
2 D
3
SD
Q 5
Q̄ 6
RD
1
10
12 D
11
SD
Q 9
Q̄ 8
RD
13

D-MODE

tn	tn + 1	
D	Q	Q̄
0	0	1
1	1	0

R-S MODE

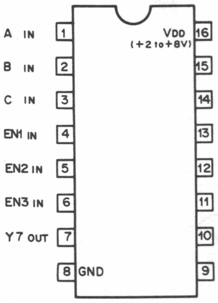
INPUT		OUTPUT	
RD	SD	Q	Q̄
0	0	1	1
0	1	0	1
1	0	1	0
1	1	D-MODE	

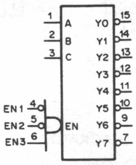
0; LOW LEVEL
1; HIGH LEVEL

TC40H138F (TOSHIBA) FLAT PACKAGE

C-MOS 3-TO-8-LINE DECODER/DEMULTIPLEXER

– TOP VIEW –


A IN 1
B IN 2
C IN 3
EN1 IN 4
EN2 IN 5
EN3 IN 6
Y7 OUT 7
8 GND
VDD (+2 to +8V) 16
15 Y0 OUT
14 Y1 OUT
13 Y2 OUT
12 Y3 OUT
11 Y4 OUT
10 Y5 OUT
9 Y6 OUT


1 A
2 B
3 C
EN1 4
EN2 5
EN3 6
EN
Y0 15
Y1 14
Y2 13
Y3 12
Y4 11
Y5 10
Y6 9
Y7 7

INPUTS				OUTPUTS							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

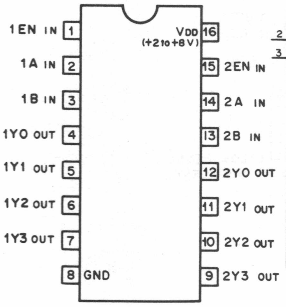
$EN = \overline{EN1} \cdot \overline{EN2} \cdot EN3$

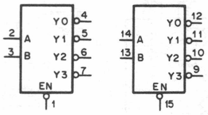
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC40H139F (TOSHIBA) FLAT PACKAGE

C-MOS 2-TO-4-LINE DECODER/DEMULTIPLXER

– TOP VIEW –


1EN IN 1
1A IN 2
1B IN 3
1Y0 OUT 4
1Y1 OUT 5
1Y2 OUT 6
1Y3 OUT 7
8 GND
VDD (+2 to +8V) 16
15 2EN IN
14 2A IN
13 2B IN
12 2Y0 OUT
11 2Y1 OUT
10 2Y2 OUT
9 2Y3 OUT


2 A
3 B
Y0 4
Y1 5
Y2 6
Y3 7
EN
1
14 A
13 B
Y0 12
Y1 11
Y2 10
Y3 9
EN
15

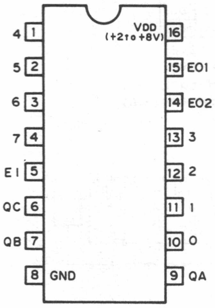
INPUTS			OUTPUTS			
EN	B	A	Y3	Y2	Y1	Y0
0	0	0	1	1	1	0
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1
1	X	X	1	1	1	1

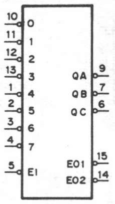
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC40H148F (TOSHIBA) FLAT PACKAGE

C-MOS 8-TO-3-LINE PRIORITY ENCODER

– TOP VIEW –


4 1
5 2
6 3
7 4
EI 5
QC 6
QB 7
8 GND
VDD (+2 to +8V) 16
15 EO1
14 EO2
13 3
12 2
11 1
10 0
9 QA


10 0
11 1
12 2
13 3
1 4
2 5
3 6
4 7
5 EI
QA 9
QB 7
QC 6
EO1 15
EO2 14

EI ; ENABLE IN
EO ; ENABLE OUT

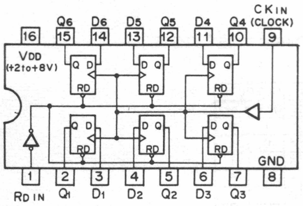
INPUTS									OUTPUTS				
EI	7	6	5	4	3	2	1	0	QC	QB	QA	EO1	EO2
1	X	X	X	X	X	X	X	X	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	0	1
0	1	1	1	1	1	1	1	0	1	1	1	1	0
0	1	1	1	1	1	1	0	X	1	1	0	1	0
0	1	1	1	1	1	0	X	X	1	0	1	1	0
0	1	1	1	1	0	X	X	X	1	0	0	1	0
0	1	1	1	0	X	X	X	X	0	1	1	1	0
0	1	1	0	X	X	X	X	X	0	1	0	1	0
0	1	0	X	X	X	X	X	X	0	0	1	1	0
0	0	X	X	X	X	X	X	X	0	0	0	1	0

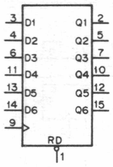
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC40H174F (TOSHIBA) FLAT PACKAGE

C-MOS D-TYPE FLIP-FLOP

– TOP VIEW –


Q6 D6 D5 Q5 D4 Q4 CKIN (CLOCK)
16 15 14 13 12 11 10 9
VDD (+2 to +8V)
Q D
RD
GND
1 2 3 4 5 6 7 8
RD IN Q1 D1 D2 Q2 D3 Q3

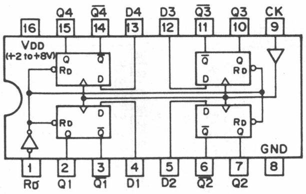

3 D1
4 D2
6 D3
11 D4
13 D5
14 D6
9
Q1 2
Q2 5
Q3 7
Q4 10
Q5 12
Q6 15
RD
1

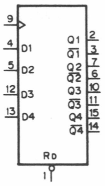
INPUTS			OUTPUT
CK	D	RD	Q
↑	0	1	0
↑	1	1	1
↓	X	1	Qo
X	X	0	0

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC40H175F (TOSHIBA) FLAT PACKAGE

C-MOS D-TYPE FLIP-FLOP WITH CLEAR
– TOP VIEW –


Q4
Q̄4
D4
D3
Q̄3
Q3
CK
16
15
14
13
12
11
10
9
VDD
(+2 to +8V)
RD
D
Q
Q̄
GND
1
2
3
4
5
6
7
8
R̄D
Q1
Q̄1
D1
D2
Q̄2
Q2

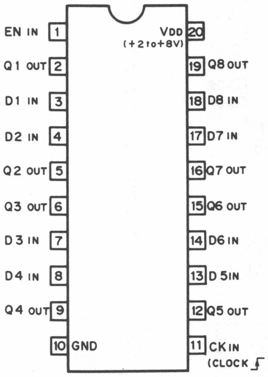

9
4
5
12
13
D1
D2
D3
D4
Q1
Q̄1
Q2
Q̄2
Q3
Q̄3
Q4
Q̄4
2
3
7
6
10
11
15
14
RD
1

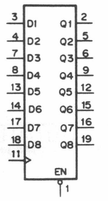
RD	CK	D	Q	Q̄
0	X	X	0	1
1	↑	1	1	0
1	↑	0	0	1
1	0	X	Qo	Q̄o

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC40H374F (TOSHIBA) FLAT PACKAGE

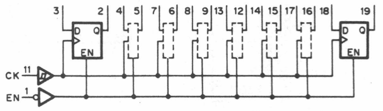
C-MOS 3-STATE OUTPUTS OCTAL D-TYPE FLIP-FLOP
– TOP VIEW –


EN IN 1
Q1 OUT 2
D1 IN 3
D2 IN 4
Q2 OUT 5
Q3 OUT 6
D3 IN 7
D4 IN 8
Q4 OUT 9
10 GND
VDD (+2 to +8V) 20
19 Q8 OUT
18 D8 IN
17 D7 IN
16 Q7 OUT
15 Q6 OUT
14 D6 IN
13 D5 IN
12 Q5 OUT
11 CK IN (CLOCK ↑)


3
4
7
8
13
14
17
18
11
D1
D2
D3
D4
D5
D6
D7
D8
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
2
5
6
9
12
15
16
19
EN
1

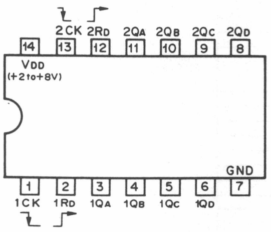
INPUTS			OUT
EN	D	CK	Q
0	1	↑	1
0	0	↑	0
0	X	0	Qo
1	X	X	HI-Z

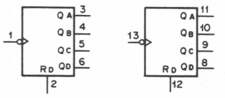
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH IMPEDANCE

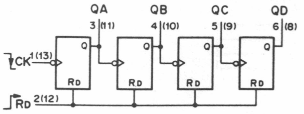

3
2
4
5
7
6
8
9
13
12
14
15
17
16
18
19
D
Q
EN
CK 11
EN 1

TC40H393F (TOSHIBA) FLAT PACKAGE

C-MOS 4-BIT BINARY COUNTER
– TOP VIEW –


2CK
2RD
2QA
2QB
2QC
2QD
14
13
12
11
10
9
8
VDD
(+2 to +8V)
GND
1
2
3
4
5
6
7
1CK
1RD
1QA
1QB
1QC
1QD


1
QA
QB
QC
QD
RD
3
4
5
6
2
13
QA
QB
QC
QD
RD
11
10
9
8
12


QA
QB
QC
QD
3 (11)
4 (10)
5 (9)
6 (8)
CK 1 (13)
RD 2 (12)
Q
RD

COUNT SEQUENCE

COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

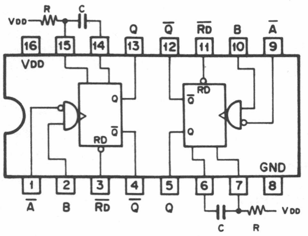
RESET/COUNT FUNCTION

RD	QD	QC	QB	QA
1	0	0	0	0
0	COUNT			

0; LOW LEVEL
1; HIGH LEVEL

TC74HC123AP (TOSHIBA)

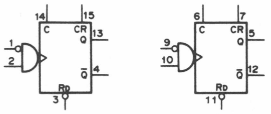
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS
– TOP VIEW –


VDD
R
C
Q
Q̄
R̄D
B
Ā
16
15
14
13
12
11
10
9
VDD
RD
Q
Q̄
GND
1
2
3
4
5
6
7
8
Ā
B
R̄D
Q̄
Q
C
R
VDD

INPUT			OUTPUT	
RD	A	B	Q	Q̄
0	X	X	0	1
1	1	X	0	1
1	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
↑	0	1	⊓	⊔

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

OUTPUT PULSE WIDTH = 0.46CR

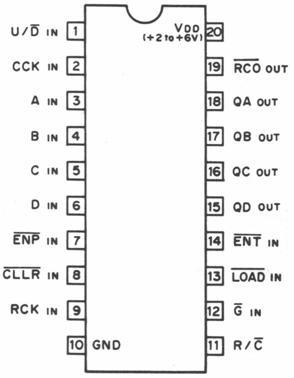

14
15
C
CR
Q
13
1
2
Q̄
4
RD
3
6
7
C
CR
Q
5
9
10
Q̄
12
RD
11

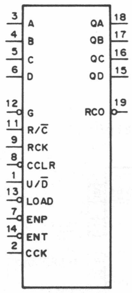
NOTE :

TYPE	VDD
TC74HCT123AF	+5V
OTHER TYPES	+2 to +6V

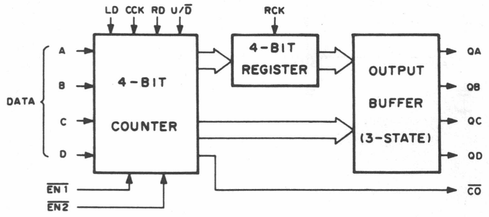
TC74HC697AP (TOSHIBA)

C-MOS UP/DOWN 4-BIT BINARY COUNTER/REGISTER (3-STATE)
– TOP VIEW –


U/D̄ IN 1
CCK IN 2
A IN 3
B IN 4
C IN 5
D IN 6
ĒN̄P̄ IN 7
C̄L̄L̄R̄ IN 8
RCK IN 9
10 GND
VDD (+2 to +6V) 20
19 R̄C̄Ō OUT
18 QA OUT
17 QB OUT
16 QC OUT
15 QD OUT
14 ĒN̄T̄ IN
13 L̄ŌĀD̄ IN
12 Ḡ IN
11 R/C̄


3
4
5
6
A
B
C
D
QA
QB
QC
QD
18
17
16
15
12
G
11
R/C̄
9
RCK
8
CCLR
1
U/D̄
13
LOAD
7
ENP
14
ENT
2
CCK
RCO
19

A – D : DATA INPUTS
CCK : COUNTER CLOCK
C̄C̄L̄R̄ : COUNTER CLEAR
RCK : REGISTER CLOCK
U/D̄ : COUNTER UP/DOWN SELECT
R/C̄ : REGISTER/COUNTER SELECT
Ḡ : OUTPUT GATE
ĒN̄P̄ : FEATURE ENABLE P
ĒN̄T̄ : FEATURE ENABLE T
R̄C̄Ō : RIPPLE-CARRY OUTPUT
QA – QD : DATA OUTPUTS


LD
CCK
RD
U/D̄
RCK
DATA
A
B
C
D
4-BIT COUNTER
4-BIT REGISTER
OUTPUT BUFFER (3-STATE)
QA
QB
QC
QD
ĒN̄1̄
ĒN̄2̄
C̄Ō

INPUTS									OUTPUTS			
R̄D̄	L̄D̄	ĒN̄1̄	ĒN̄2̄	CCK	U/D̄	RCK	R/C̄	Ḡ	QA	QB	QC	QD
X	X	X	X	X	X	X	X	1	HI-Z	HI-Z	HI-Z	HI-Z
0	X	X	X	X	X	X	0	0	0	0	0	0
1	0	X	X	↑	X	X	0	0	a	b	c	d
1	1	1	X	↑	X	X	0	0	NO CHANGE			
1	1	X	1	↑	X	X	0	0				
1	1	0	0	↑	1	X	0	0	COUNT UP			
1	1	0	0	↑	0	X	0	0	COUNT DOWN			
1	X	X	X	↓	X	X	0	0	NO CHANGE			
X	X	X	X	X	X	↑	1	0	a'	b'	c'	d'
X	X	X	X	X	X	↓	1	0	NO CHANGE			

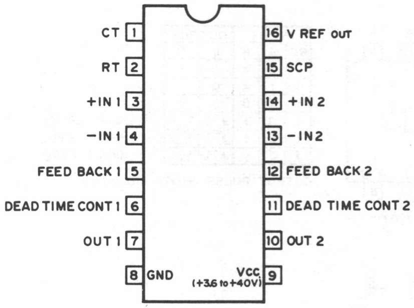
1 ; HIGH LEVEL
0 ; LOW LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE
a-d ; LEVEL OF INPUT A-D
a'-d' ; LEVEL OF A-D BEFORE INDICATED INPUT CONDITIONS WARE ESTABLISHED

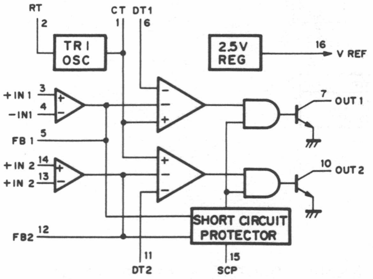
* $U/\overline{D} = HIGH ; CO = \overline{QA \cdot QB \cdot QC \cdot QD \cdot \overline{EN2}}$
$U/\overline{D} = LOW ; CO = \overline{\overline{QA} \cdot \overline{QB} \cdot \overline{QC} \cdot \overline{QD} \cdot \overline{EN2}}$

TL1451ACNS (TI) FLAT PACKAGE

DUAL PWM POWER CONTROLLER

– TOP VIEW –

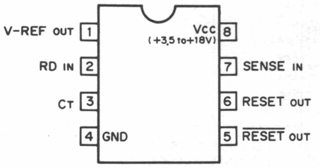

CT 1
RT 2
+IN 1 3
–IN 1 4
FEED BACK 1 5
DEAD TIME CONT 1 6
OUT 1 7
8 GND
16 V REF OUT
15 SCP
14 +IN 2
13 –IN 2
12 FEED BACK 2
11 DEAD TIME CONT 2
10 OUT 2
Vcc (+3.6 to +40V) 9

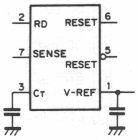

RT
2
CT
1
DT1
6
TRI OSC
2.5V REG
16
V REF
+IN 1
3
–IN1
4
FB 1
5
7
OUT 1
+IN 2
14
+IN 2
13
10
OUT 2
FB2
12
SHORT CIRCUIT PROTECTOR
11
DT2
15
SCP

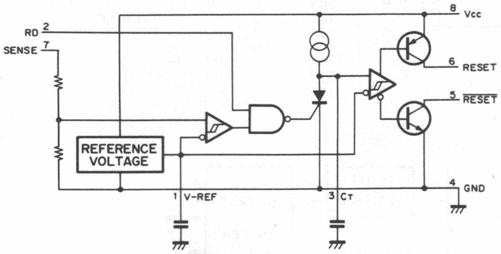
TL7705CP-B (TI)

POWER VOLTAGE SUPERVISOR

– TOP VIEW –


V-REF OUT 1
RD IN 2
CT 3
4 GND
Vcc (+3.5 to +18V) 8
7 SENSE IN
6 RESET OUT
5 RESET OUT

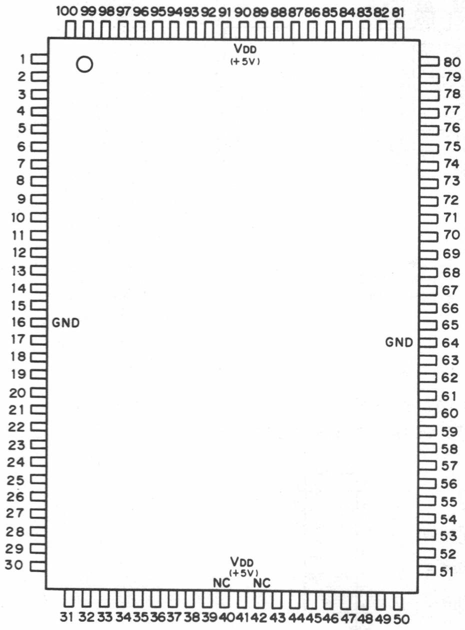

2
RD
RESET
6
7
SENSE
5
RESET
3
CT
V-REF
1

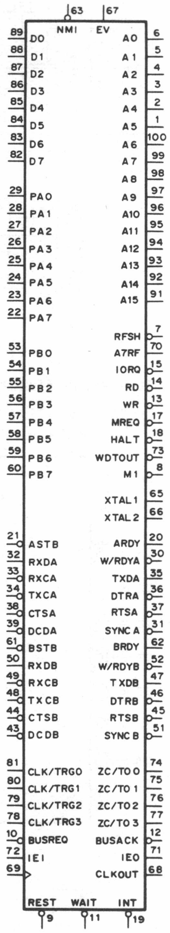

8
Vcc
RD
2
SENSE
7
6
RESET
5
RESET
REFERENCE VOLTAGE
4
GND
1
V-REF
3
CT

TMPZ84C015AF-6 (TOSHIBA) FLAT PACKAGE

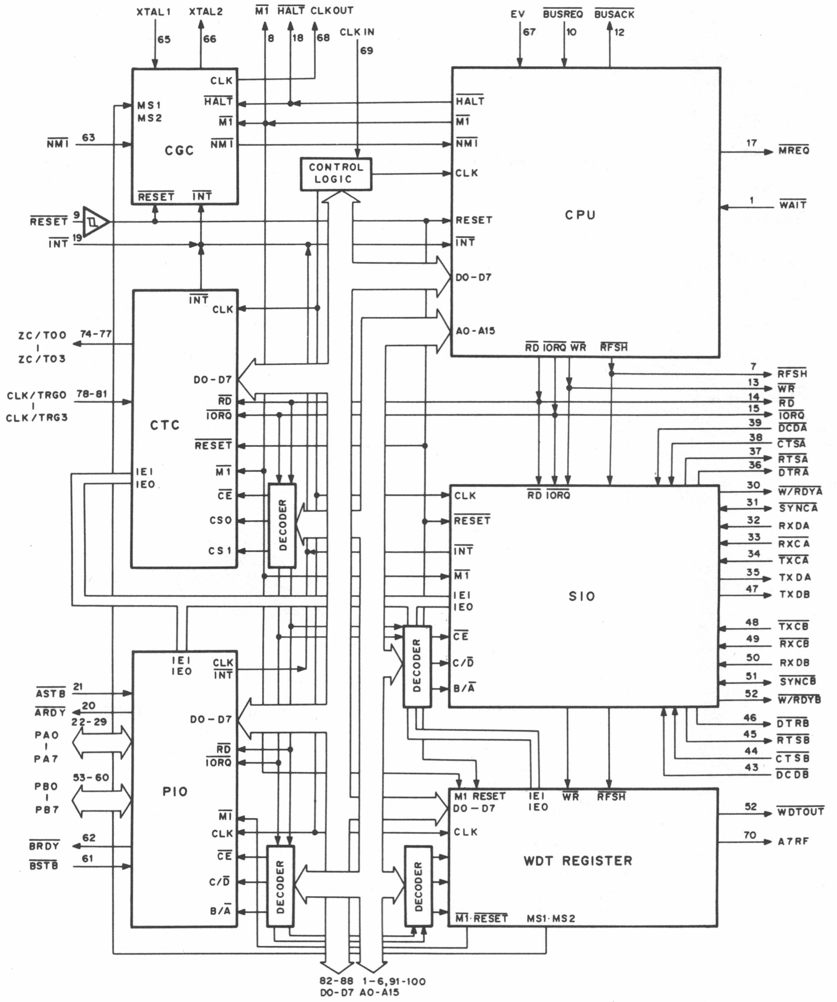
C-MOS 8-BIT MICROPROCCESSOR

– TOP VIEW –


100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
VDD (+5V)
GND
GND
80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51
VDD (+5V)
NC
NC
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50


63
67
NMI
EV
89 D0
88 D1
87 D2
86 D3
85 D4
84 D5
83 D6
82 D7
29 PA0
28 PA1
27 PA2
26 PA3
25 PA4
24 PA5
23 PA6
22 PA7
53 PB0
54 PB1
55 PB2
56 PB3
57 PB4
58 PB5
59 PB6
60 PB7
21 ASTB
32 RXDA
33 RXCA
34 TXCA
38 CTSA
39 DCDA
61 BSTB
50 RXDB
49 RXCB
48 TXCB
44 CTSB
43 DCDB
81 CLK/TRG0
80 CLK/TRG1
79 CLK/TRG2
78 CLK/TRG3
10 BUSREQ
72 IEI
69
A0 6
A1 5
A2 4
A3 3
A4 2
A5 1
A6 100
A7 99
A8 98
A9 97
A10 96
A11 95
A12 94
A13 93
A14 92
A15 91
RFSH 7
A7RF 70
IORQ 15
RD 14
WR 13
MREQ 17
HALT 18
WDTOUT 73
M1 8
XTAL1 65
XTAL2 66
ARDY 20
W/RDYA 30
TXDA 35
DTRA 36
RTSA 37
SYNC A 31
BRDY 62
W/RDYB 52
TXDB 47
DTRB 46
RTSB 45
SYNC B 51
ZC/TO0 74
ZC/TO1 75
ZC/TO2 76
ZC/TO3 77
BUSACK 12
IEO 71
CLKOUT 68
REST 9
WAIT 11
INT 19

NO.	IN	OUT	SYMBOL	NO.	IN	OUT	SYMBOL
1		O	A5	51	O	O	SYNCB
2		O	A4	52		O	W/RDYB
3		O	A3	53	O	O	PB0
4		O	A2	54	O	O	PB1
5		O	A1	55	O	O	PB2
6		O	A0	56	O	O	PB3
7		O	RFSH	57	O	O	PB4
8		O	M1	58	O	O	PB5
9	O		REST	59	O	O	PB6
10	O		BUSREQ	60	O	O	PB7
11	O		WAIT	61	O		BSTB
12		O	BUSACK	62		O	BRDY
13		O	WR	63	O		NMI
14		O	RD	64			GND
15		O	IORQ	65	O		XTAL1
16			GND	66		O	XTAL2
17		O	MREQ	67	O		EV
18		O	HALT	68		O	CLKOUT
19	O		INT	69	O		CLKIN
20		O	ARDY	70		O	A7RF
21	O		ASTB	71		O	IEO
22	O	O	PA7	72	O		IEI
23	O	O	PA6	73		O	WDTOUT
24	O	O	PA5	74		O	ZC/TO0
25	O	O	PA4	75		O	ZC/TO1
26	O	O	PA3	76		O	ZC/TO2
27	O	O	PA2	77		O	ZC/TO3
28	O	O	PA1	78	O		CLK/TRG3
29	O	O	PA0	79	O		CLK/TRG2
30		O	W/RDYA	80	O		CLK/TRG1
31	O	O	SYNCA	81	O		CLK/TRG0
32	O		RXDA	82	O	O	D7
33	O		RXCA	83	O	O	D6
34	O		TXCA	84	O	O	D5
35		O	TXDA	85	O	O	D4
36		O	DTRA	86	O	O	D3
37		O	RTSA	87	O	O	D2
38	O		CTSA	88	O	O	D1
39	O		DCDA	89	O	O	D0
40			NC	90			VDD
41			VDD	91		O	A15
42			NC	92		O	A14
43	O		DCDB	93		O	A13
44	O		CTSB	94		O	A12
45		O	RTSB	95		O	A11
46		O	DTRB	96		O	A10
47		O	TXDB	97		O	A9
48	O		TXCB	98		O	A8
49	O		RXCB	99		O	A7
50	O		RXDB	100		O	A6

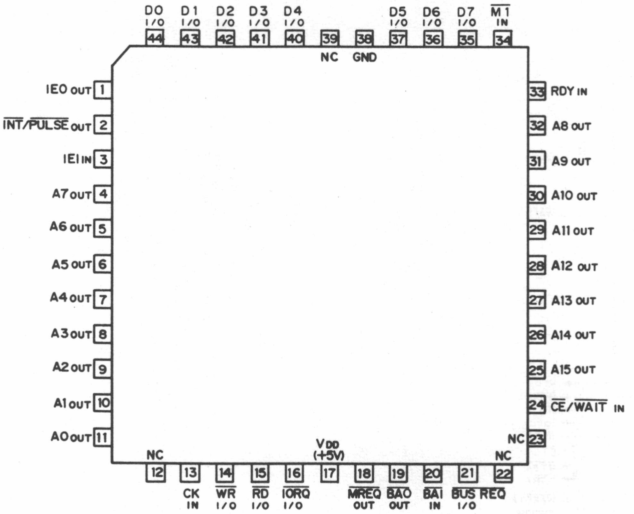

XTAL1
XTAL2
65
66
M1
HALT
CLKOUT
8
18
68
CLK IN
69
EV
BUSREQ
BUSACK
67
10
12
CGC
MS1
MS2
CLK
HALT
M1
NMI
RESET
INT
NMI 63
RESET 9
INT 19
CONTROL LOGIC
CPU
HALT
M1
NMI
CLK
RESET
INT
D0-D7
A0-A15
RD IORQ WR RFSH
17 MREQ
1 WAIT
7 RFSH
13 WR
14 RD
15 IORQ
39 DCDA
38 CTSA
37 RTSA
36 DTRA
CTC
INT
CLK
D0-D7
RD
IORQ
RESET
M1
IEI
IEO
CE
CS0
CS1
ZC/T00 74-77 ZC/T03
CLK/TRG0 78-81 CLK/TRG3
DECODER
SIO
CLK
RD IORQ
RESET
INT
M1
IEI
IEO
CE
C/D
B/A
30 W/RDYA
31 SYNCA
32 RXDA
33 RXCA
34 TXCA
35 TXDA
47 TXDB
48 TXCB
49 RXCB
50 RXDB
51 SYNCB
52 W/RDYB
46 DTRB
45 RTSB
44 CTSB
43 DCDB
PIO
IEI
IEO
CLK
INT
D0-D7
RD
IORQ
MI
CLK
CE
C/D
B/A
ASTB 21
ARDY 20
22-29
PA0 PA7
53-60
PB0 PB7
BRDY 62
BSTB 61
WDT REGISTER
M1 RESET
D0-D7
CLK
IEI
IEO
WR
RFSH
M1·RESET
MS1·MS2
52 WDTOUT
70 A7RF
82-88 D0-D7
1-6,91-100 A0-A15

A0 – A15	3-STATE ADDRESS BUS OUTPUTS
BUSACK	BUS ACKNOWLEDGE OUTPUT
BUSREQ	BUS REQUEST INPUT
CLK/TRIG0 – 3	EXTERNAL CLOCK/TIMER TRIGGER 0 – 3 INPUTS
D0 – D7	3-STATE DATA BUS INPUTS/OUTPUTS
EV	EVALUATER INPUT
HALT	HALT OUTPUT
IEI/IEO	CTC INTERRUPT ENABLE INPUT/OUTPUT
INT	MASKABLE INTERRUPT REQUEST/INPUT
IORQ	3-STATE I/O REQUEST OUTPUT
MI	3-STATE MACHINE CYCLE 1 OUTPUT
MREQ	3-STATE MEMORY REQUEST OUTPUT
NMI	NON-MASKABLE INTERRUPT REQUEST INPUT
PA0 – PA7, PB0 – PB7	3-STATE I/O PORT
RD	3-STATE READ OUTPUT
REST	RESET INPUT
RFSH	REFRESH OUTPUT
WAIT	WAIT REQUEST INPUT

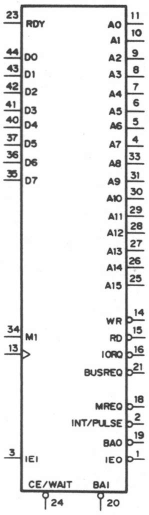
WR	3-STATE WRITE OUTPUT
ZC/TO0 – 3	ZERO COUNT/TIME OUT 0 – 3 OUTPUTS
ASTB	PORT A STROBE PULSE INPUT
ARDY	REGISTER A READY OUTPUT
BSTB	PORT B STROBE PULSE INPUT
BRDY	REGISTER B READY OUTPUT
SYNCA, SYNCB	SYNC INPUT/OUTPUT
W/RADYA, W/RADYB	WAIT/READY OUTPUT
RXDA, RXDB	SERIAL DATA INPUT
RXCA, RXCB	RECEIVE CLOCK INPUT
TXCA, TXCB	TRANSMISSION CLOCK INPUT
TXDA, TXDB	SERIAL DATA OUTPUT
DTRA, DTRB	DATA TERMINAL READY OUTPUT
RTSA, RTSB	TRANSMISSION REQUEST OUTPUT
CTSA, CTSB	TRANSMISSION ENABLE INPUT
DCDA, DCDB	DATA CARRIER DETECT OUTPUT
WDTOUT	WATCH DOG TIMER OUTPUT

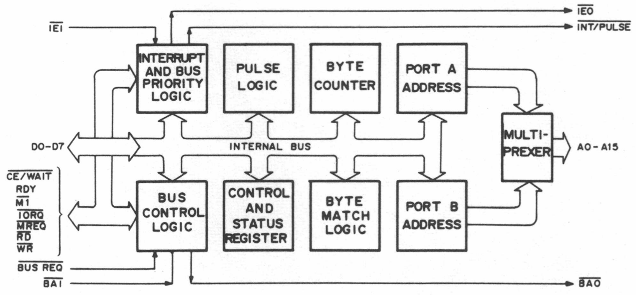
TMPZ84C10AF (TOSHIBA) FLAT PACKAGE

C-MOS DIRECT MEMORY ACCESS CONTROLLER
– TOP VIEW –


D0 I/O 44
D1 I/O 43
D2 I/O 42
D3 I/O 41
D4 I/O 40
39 NC
38 GND
D5 I/O 37
D6 I/O 36
D7 I/O 35
M1 IN 34
IEO OUT 1
INT/PULSE OUT 2
IEI IN 3
A7 OUT 4
A6 OUT 5
A5 OUT 6
A4 OUT 7
A3 OUT 8
A2 OUT 9
A1 OUT 10
A0 OUT 11
33 RDY IN
32 A8 OUT
31 A9 OUT
30 A10 OUT
29 A11 OUT
28 A12 OUT
27 A13 OUT
26 A14 OUT
25 A15 OUT
24 CE/WAIT IN
NC 23
12 NC
13 CK IN
14 WR I/O
15 RD I/O
16 IORQ I/O
17 VDD (+5V)
18 MREQ OUT
19 BAO OUT
20 BAI IN
21 BUS REQ I/O
22 NC

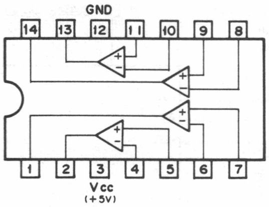
A0–A15 ; 3-STATE ADDRESS BUS OUTPUTS
D0–D7 ; 3-STATE DATA INPUTS/OUTPUTS
$\overline{WR}$; 3-STATE WRITE ENABLE INPUT/OUTPUT
$\overline{RD}$; 3-STATE READ ENABLE INPUT/OUTPUT
$\overline{IORQ}$; 3-STATE I/O REQUEST INPUT/OUTPUT
$\overline{MREQ}$; 3-STATE MEMORY REQUEST OUTPUT
$\overline{BAO}$; BUS ENABLE OUTPUT
$\overline{BAI}$; BUS ENABLE INPUT
$\overline{BUSREQ}$; BUS REQUEST INPUT/OUTPUT
$\overline{CE/WAIT}$; CHIP ENABLE/WAIT INPUT
RDY ; READY INPUT
$\overline{M1}$; MACHINE CYCLE 1 INPUT
IEO ; INTERRUPT ENABLE OUTPUT
$\overline{IEI}$; INTERRUPT ENABLE INPUT
$\overline{INT/PULSE}$; INTERRUPT REQUEST OUTPUT


23 RDY
44 D0
43 D1
42 D2
41 D3
40 D4
37 D5
36 D6
35 D7
34 M1
13
3 IEI
A0 11
A1 10
A2 9
A3 8
A4 7
A5 6
A6 5
A7 4
A8 33
A9 31
A10 30
A11 29
A12 28
A13 27
A14 26
A15 25
WR 14
RD 15
IORQ 16
BUSREQ 21
MREQ 18
INT/PULSE 2
BAO 19
IEO 1
CE/WAIT 24
BAI 20


IEI
IEO
INT/PULSE
INTERRUPT AND BUS PRIORITY LOGIC
PULSE LOGIC
BYTE COUNTER
PORT A ADDRESS
MULTI-PREXER
A0 - A15
D0-D7
INTERNAL BUS
BUS CONTROL LOGIC
CONTROL AND STATUS REGISTER
BYTE MATCH LOGIC
PORT B ADDRESS
CE/WAIT
RDY
M1
IORQ
MREQ
RD
WR
BUS REQ
BAI
BAO

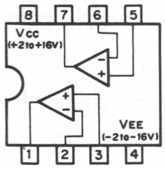
UPC339C (NEC)

QUAD COMPARATORS
– TOP VIEW –


GND
14
13
12
11
10
9
8
1
2
3
4
5
6
7
Vcc
(+5V)

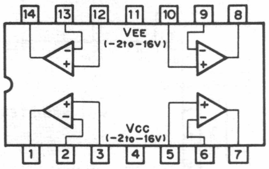
UPC4062G2 (NEC) FLAT PACKAGE

TTL-DUAL OPERATIONAL AMPLIFIER WITH LOW POWER CONSUMPTION
– TOP VIEW –

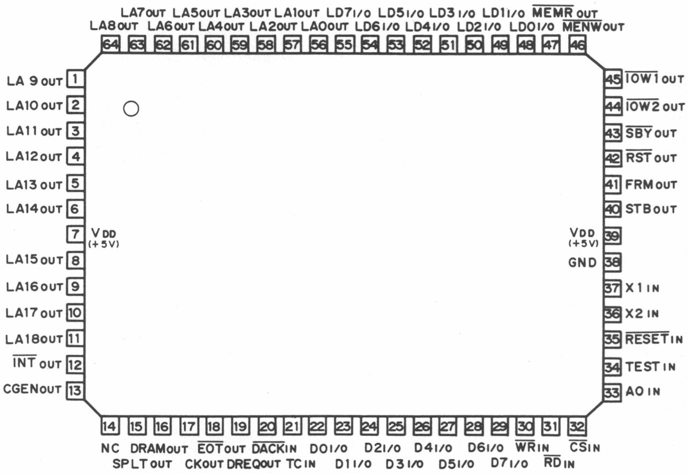

8
7
6
5
Vcc
(+2 to +16V)
VEE
(–2 to –16V)
1
2
3
4

UPC4064G (NEC) FLAT PACKAGE

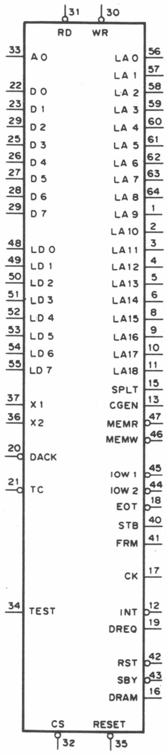
TTL-QUAD OPERATIONAL AMPLIFIER WITH LOW POWER CONSUMPTION
– TOP VIEW –

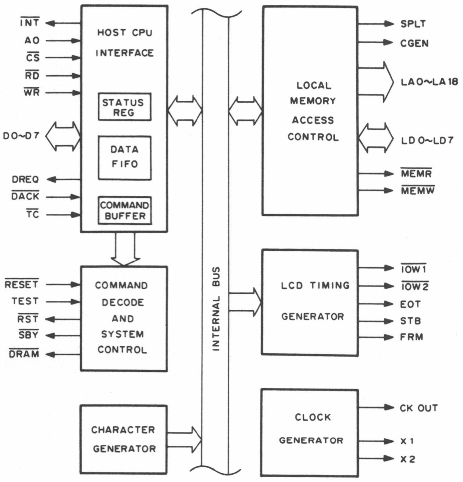

14
13
12
11
10
9
8
VEE
(–2 to –16V)
Vcc
(–2 to –16V)
1
2
3
4
5
6
7

UPD72030G (NEC) FLAT PACKAGE
C-MOS LCD CONTROL UNIT
– TOP VIEW –


LA7 OUT
LA5 OUT
LA3 OUT
LA1 OUT
LD7 I/O
LD5 I/O
LD3 I/O
LD1 I/O
$\overline{\text{MEMR}}$ OUT
LA8 OUT
LA6 OUT
LA4 OUT
LA2 OUT
LA0 OUT
LD6 I/O
LD4 I/O
LD2 I/O
LD0 I/O
$\overline{\text{MENW}}$ OUT
LA 9 OUT 1
LA10 OUT 2
LA11 OUT 3
LA12 OUT 4
LA13 OUT 5
LA14 OUT 6
7 VDD (+5V)
LA15 OUT 8
LA16 OUT 9
LA17 OUT 10
LA18 OUT 11
$\overline{\text{INT}}$ OUT 12
CGEN OUT 13
45 $\overline{\text{IOW1}}$ OUT
44 $\overline{\text{IOW2}}$ OUT
43 $\overline{\text{SBY}}$ OUT
42 $\overline{\text{RST}}$ OUT
41 FRM OUT
40 STB OUT
VDD (+5V) 39
GND 38
37 X1 IN
36 X2 IN
35 $\overline{\text{RESET}}$ IN
34 TEST IN
33 A0 IN
NC
SPLT OUT
DRAM OUT
CK OUT
$\overline{\text{EOT}}$ OUT
DREQ OUT
$\overline{\text{DACK}}$ IN
TC IN
D0 I/O
D1 I/O
D2 I/O
D3 I/O
D4 I/O
D5 I/O
D6 I/O
D7 I/O
$\overline{\text{WR}}$ IN
$\overline{\text{RD}}$ IN
$\overline{\text{CS}}$ IN

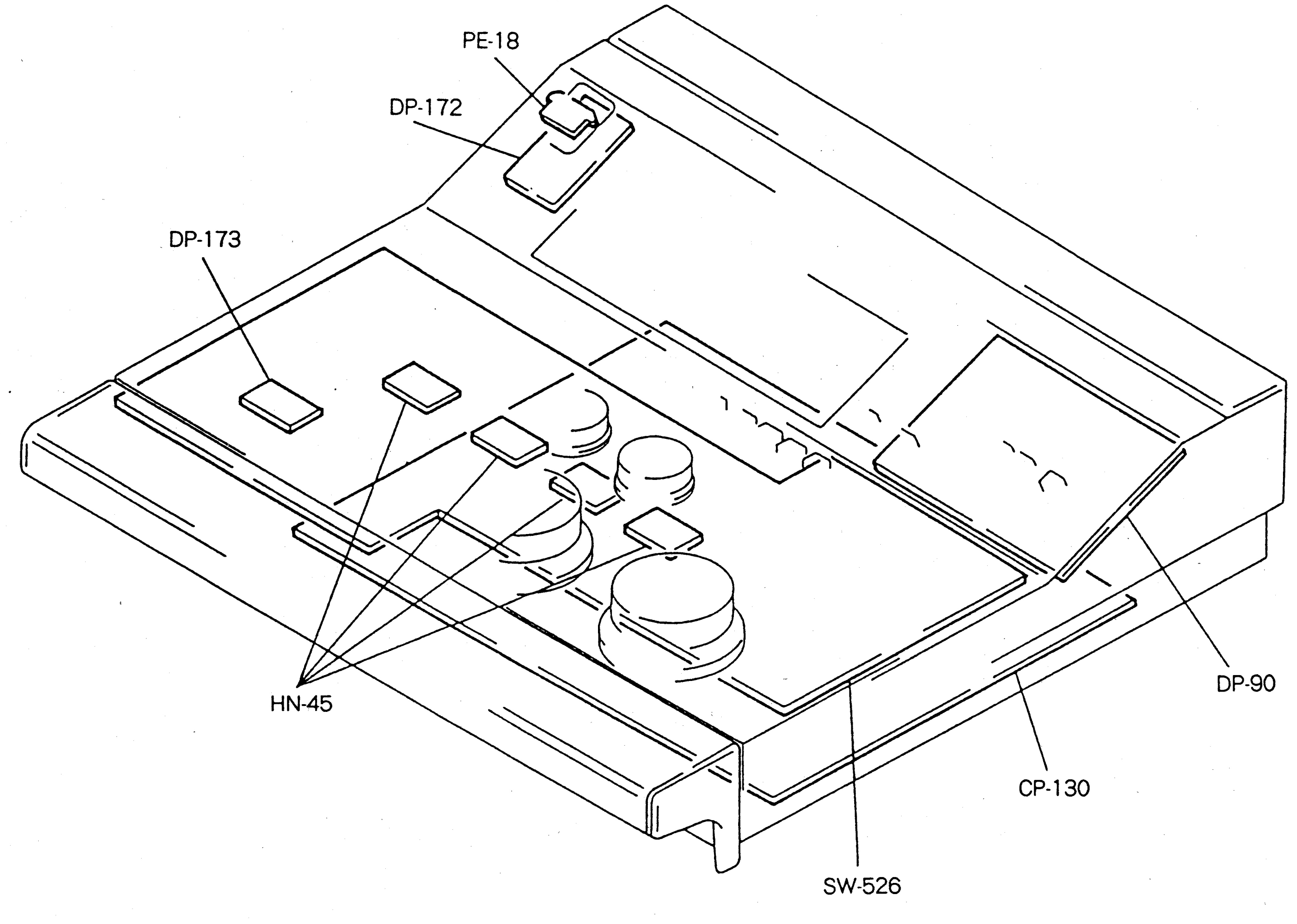
D0-D7 ; DATA INPUTS/OUTPUTS
A0 ; ADDRESS INPUT
$\overline{\text{CS}}$; CHIP SELECT INPUT
$\overline{\text{RD}}$; READ STROBE INPUT
$\overline{\text{WR}}$; WRITE STROBE INPUT
$\overline{\text{DREQ}}$; DMA REQUEST OUTPUT
$\overline{\text{DACK}}$; DMA ACKNOWLEDGE INPUT
$\overline{\text{TC}}$; TERMINAL COUNT INPUT
LD0-LD7 ; LOCAL DATA INPUTS/OUTPUTS
LA0-LA18 ; LOCAL ADDRESS OUTPUTS
CGEN ; CHARACTER GENERATOR ENABLE OUTPUT
SPST ; SPLIT SCREEN SELECT OUTPUT
$\overline{\text{DRAM}}$; DRAM RESET ENABLE OUTPUT
$\overline{\text{MEMR}}$; LOCAL MEMORY READ OUTPUT
$\overline{\text{MEMW}}$; LOCAL MEMORY WRITE OUTPUT
$\overline{\text{IOW1}}$, $\overline{\text{IOW2}}$; LCD DRIVER WRITE STROBE OUTPUT
STB ; STROBE OUTPUT
$\overline{\text{FRM}}$; FRAME OUTPUT
$\overline{\text{EOT}}$; END OF TRANSFER OUTPUT
$\overline{\text{RESET}}$; LCD DRIVER RESET OUTPUT
$\overline{\text{SBY}}$; LCD STAND-BY OUTPUT
$\overline{\text{INT}}$; INTERRUPT REQUEST OUTPUT


31 RD
30 WR
33 A0
22 D0
23 D1
29 D2
25 D3
26 D4
27 D5
28 D6
29 D7
48 LD0
49 LD1
50 LD2
51 LD3
52 LD4
53 LD5
54 LD6
55 LD7
37 X1
36 X2
20 DACK
21 TC
34 TEST
LA0 56
LA1 57
LA2 58
LA3 59
LA4 60
LA5 61
LA6 62
LA7 63
LA8 64
LA9 1
LA10 2
LA11 3
LA12 4
LA13 5
LA14 6
LA15 8
LA16 9
LA17 10
LA18 11
SPLT 15
CGEN 13
MEMR 47
MEMW 46
IOW1 45
IOW2 44
EOT 18
STB 40
FRM 41
CK 17
INT 12
DREQ 19
RST 42
SBY 43
DRAM 16
CS 32
RESET 35

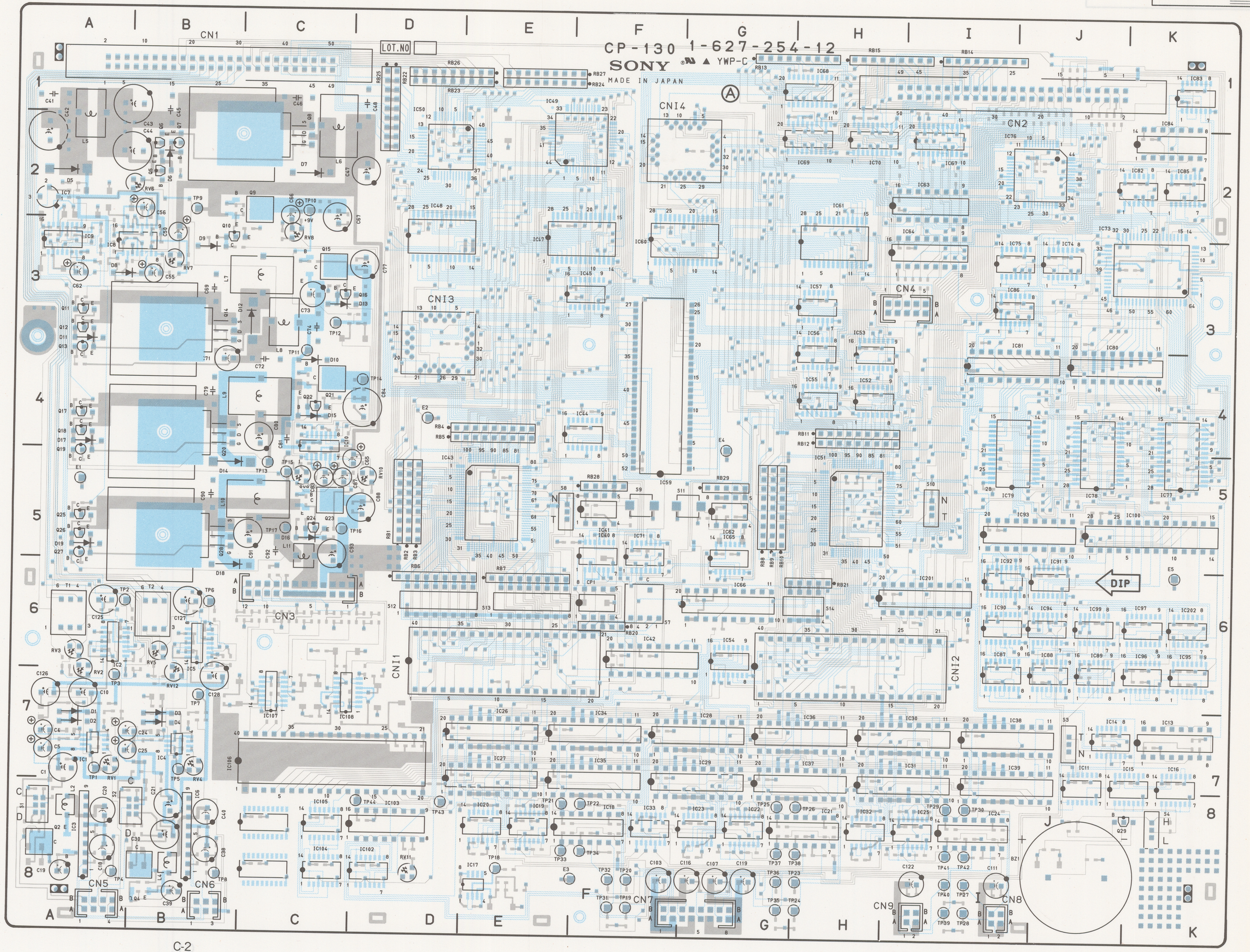

$\overline{\text{INT}}$
A0
$\overline{\text{CS}}$
$\overline{\text{RD}}$
$\overline{\text{WR}}$
D0~D7
DREQ
$\overline{\text{DACK}}$
$\overline{\text{TC}}$
HOST CPU INTERFACE
STATUS REG
DATA FIFO
COMMAND BUFFER
$\overline{\text{RESET}}$
TEST
$\overline{\text{RST}}$
$\overline{\text{SBY}}$
$\overline{\text{DRAM}}$
COMMAND DECODE AND SYSTEM CONTROL
CHARACTER GENERATOR
INTERNAL BUS
LOCAL MEMORY ACCESS CONTROL
SPLT
CGEN
LA0~LA18
LD0~LD7
$\overline{\text{MEMR}}$
$\overline{\text{MEMW}}$
LCD TIMING GENERATOR
$\overline{\text{IOW1}}$
$\overline{\text{IOW2}}$
EOT
STB
FRM
CLOCK GENERATOR
CK OUT
X1
X2

SECTION C
SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS

BOARD LAYOUT


PE-18
DP-172
DP-173
HN-45
DP-90
CP-130
SW-526

CP-130 BOARD



1-627-254-12 COMPONENT SIDE

CP-130 1-627-254-12

BZ1	J-8
CN1	B-1
CN2	I-1
CN3	C-6
CN4	I-3
CN5	A-8
CN6	B-8
CN7	G-8
CN8	I-8
CN9	I-8
CN11	E-6
CN12	H-6
CN13	D-3
CN14	F2
CP1	F-6
D1	A-7
D2	A-7
D3	B-7
D4	B-7
D5	A-2
D6	B-2
D7	C-2
D8	A-3
D9	B-3
D10	C-4
D11	A-3
D12	C-3
D13	C-3
D14	B-5
D15	C-4
D16	C-5
D17	A-4
D18	B-6
D19	A-5
E1	A-5
E2	D-4
E3	F-8
E4	G-4
E5	K-6
IC1	A-7
IC2	A-6
IC3	A-8
IC4	B-7
IC5	B-6
IC6	B-8
IC7	A-2
IC8	A-3
IC9	A-3
IC10	C-4
IC11	J-7
IC13	K-7
IC14	J-7
IC15	K-7
IC16	K-7
IC17	E-8
IC18	F-8
IC19	E-8
IC20	E-8
IC21	H-8
IC22	G-8
IC23	G-8
IC24	I-8
IC25	I-8
IC26	E-7
IC27	E-7
IC28	G-7
IC29	G-7
IC30	I-7
IC31	I-7
IC32	H-8
IC33	F-8
IC34	F-7
IC35	F-7
IC36	H-7
IC37	H-7
IC38	I-7
IC39	I-7
IC40	F-5
IC41	F-5
IC42	F-6
IC43	E-5
IC44	F-4
IC45	F-3
IC47	F-3
IC48	D-3
IC49	F-2
IC50	D-2
IC51	H-5
IC52	H-4
IC53	H-4
IC54	G-6
IC55	H-4
IC56	H-4
IC57	H-3
IC59	F-4
IC60	F-3
IC61	H-3
IC62	G-5
IC63	I-2
IC64	I-3
IC65	G-5
IC66	G-6
IC67	I-2
IC68	H-1
IC69	H-2
IC70	H-2
IC71	F-5
IC73	K-3
IC74	J-3
IC75	I-3
IC76	J-2
IC77	K-5
IC78	J-5
IC79	I-5
IC80	J-4
IC81	I-4
IC82	K-2
IC83	K-1
IC84	K-2
IC85	K-2
IC86	I-3
IC87	I-6
IC88	J-6
IC89	J-6
IC90	I-6
IC91	J-6
IC92	I-6
IC93	J-5
IC94	J-6
IC95	K-6
IC96	K-6
IC97	K-6
IC99	J-6
IC100	K-5
IC102	D-8
IC103	D-8
IC104	C-8
IC105	C-8
IC106	C-7
IC107	C-7
IC108	C-7
IC201	I-6
IC202	K-6
L2	A-8
L4	B-8
L5	A-2
L6	C-2
L7	C-3
L8	C-3
L9	C-4
L10	C-5
L11	C-5
Q2	A-8
Q4	B-8
Q5	B-2
Q6	B-2
Q7	B-2
Q8	C-2
Q9	C-2
Q10	B-3
Q11	A-3
Q12	A-3
Q13	A-4
Q14	B-3
Q15	C-3
Q16	C-3
Q17	A-4
Q18	A-4
Q19	A-5
Q20	B-4
Q21	C-4
Q22	C-4
Q23	C-5
Q24	C-5
Q25	A-5
Q26	A-5
Q27	A-5
Q28	B-5
Q29	J-8
RV1	A-7
RV2	A-7
RV3	A-6
RV4	B-7
RV5	B-6
RV6	B-2
RV7	B-3
RV8	C-3
RV9	C-5
RV10	D-5
RV11	D-8
RV12	B-7
S1	A-8
S2	B-8
S3	J-7
S4	K-8
S8	E-5
S9	F-5
S10	I-5
S12	D-6
S13	E-6
S14	H-6
T1	A-6
T2	B-6
TP1	A-7
TP2	A-6
TP3	A-7
TP4	A-8
TP5	B-7
TP6	B-6
TP7	B-7
TP8	B-8
TP9	B-2
TP10	C-2
TP11	C-4
TP12	C-3
TP13	C-5
TP14	D-4
TP15	C-5
TP16	C-5
TP17	C-5
TP18	E-8
TP19	F-8
TP20	F-8
TP21	E-8
TP22	F-8
TP23	H-8
TP24	H-8
TP25	G-8
TP26	H-8
TP27	I-8
TP28	I-8
TP29	I-8
TP30	I-8
TP31	F-8
TP32	F-8
TP33	E-8
TP34	F-8
TP35	G-8
TP36	G-8
TP37	G-8
TP38	H-8
TP39	I-8
TP40	I-8
TP41	I-8
TP42	I-8
TP43	D-8
TP44	D-8

CP-130 BOARD (1/3)

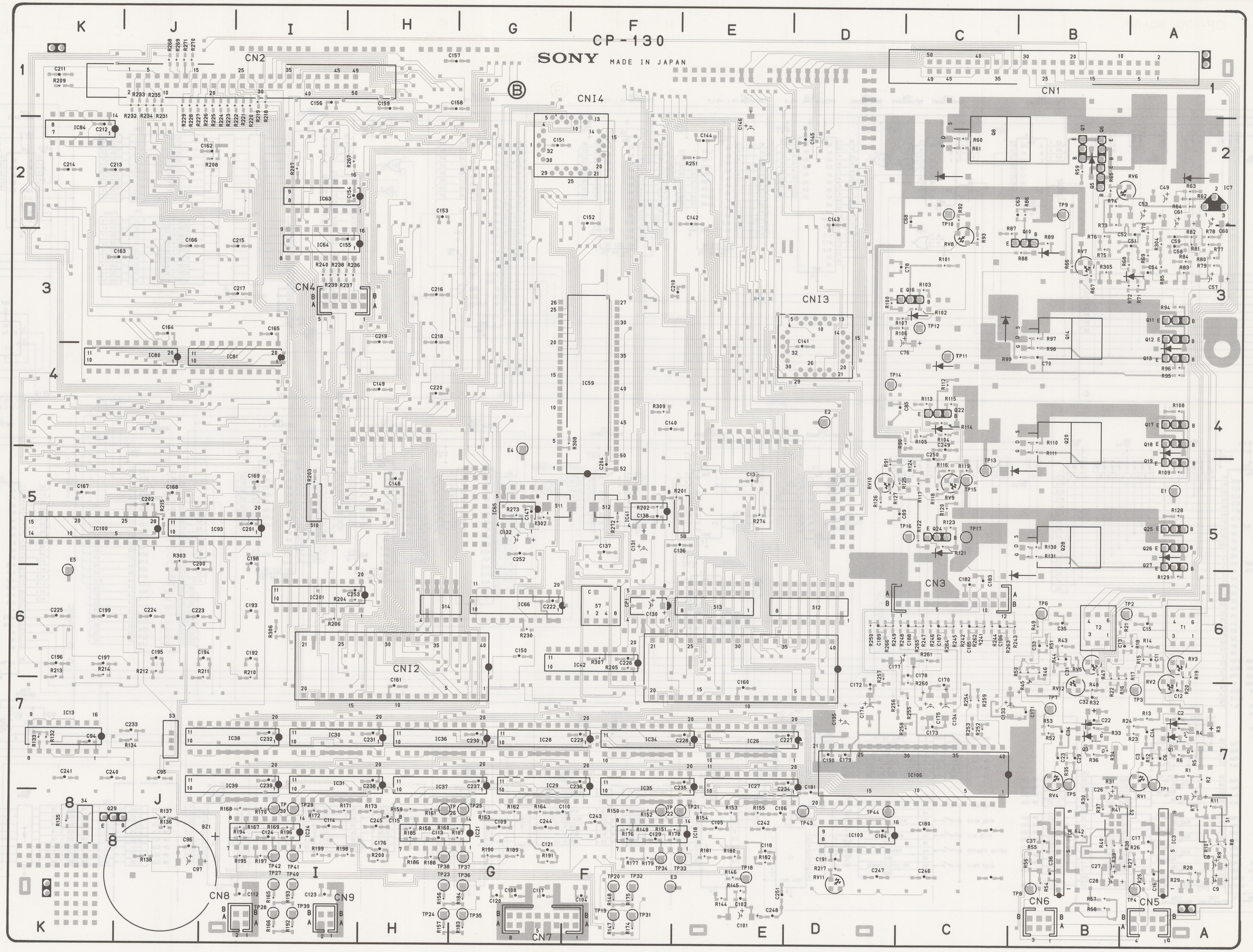
CPU SOCKET (40P) FOR EVALUATION
OPERATE
EVALUATE
BUZZER DRIVER
BUZZER OFF IN
CLOCK OUT
1
2
3
4
5

CP-130 (B) BOARD (1/3)

HDCO-350 (W. W)

B-HDCO350-CP130/M#1

CP-130 BOARD

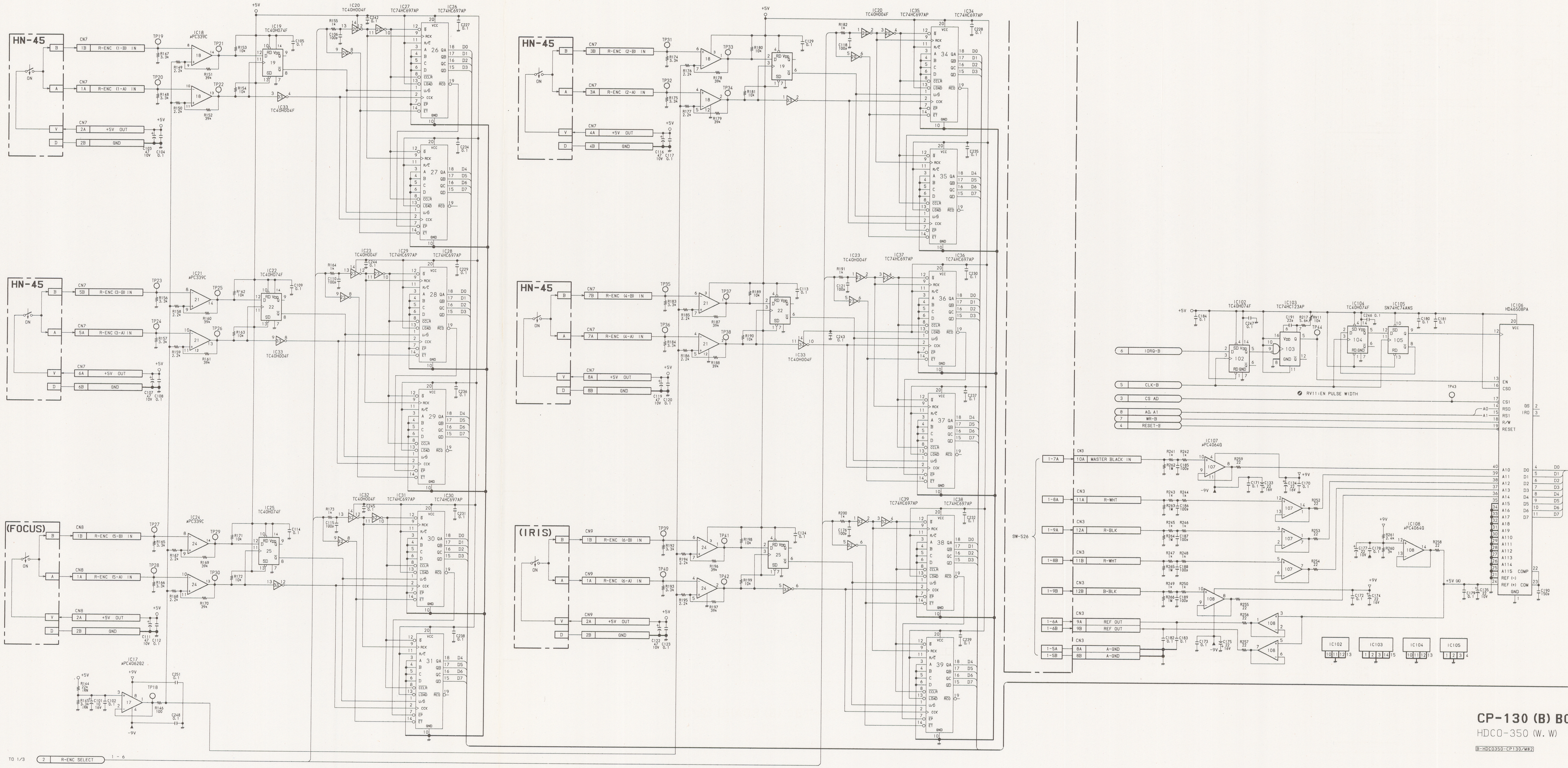


1-627-254-12 SOLDERING SIDE

CP-130 1-627-254-12

BZ1	J-8
CN1	B-1
CN2	I-1
CN3	C-6
CN4	I-3
CN5	A-8
CN6	B-8
CN7	G-8
CN8	I-8
CN9	I-8
CN11	E-6
CN12	H-6
CN13	D-3
CN14	F-2
CP1	F-6
E1	A-5
E2	D-4
E3	F-8
E4	G-4
E5	K-6
IC3	A-8
IC6	B-8
IC7	A-2
IC13	K-7
IC18	F-8
IC21	H-8
IC24	I-8
IC26	E-7
IC27	E-7
IC28	G-7
IC29	G-7
IC30	I-7
IC31	I-7
IC34	F-7
IC35	F-7
IC36	H-7
IC37	H-7
IC38	I-7
IC39	I-7
IC41	F-5
IC42	F-6
IC59	F-4
IC63	I-2
IC64	I-3
IC65	G-5
IC66	G-6
IC80	J-4
IC81	I-4
IC84	K-2
IC93	J-5
IC100	K-5
IC103	D-8
IC106	C-7
IC201	I-6
Q1	A-7
Q3	B-7
Q5	B-2
Q6	B-2
Q7	B-2
Q8	C-2
Q10	B-3
Q11	A-3
Q12	A-3
Q13	A-4
Q14	B-3
Q16	C-3
Q17	A-4
Q18	A-4
Q19	A-5
Q20	B-4
Q22	C-4
Q24	C-5
Q25	A-5
Q26	A-5
Q27	A-5
Q28	B-5
Q29	J-8
RV1	A-7
RV2	A-7
RV3	A-6
RV4	B-7
RV5	B-6
RV6	B-2
RV7	B-3
RV8	C-3
RV9	C-5
RV10	D-5
RV11	D-8
RV12	B-7
S1	A-8
S3	J-7
S4	K-8
S7	F-6
S8	E-5
S9	F-5
S10	I-5
S11	G-5
S12	D-6
S13	E-6
S14	H-6
T1	A-6
T2	B-6
TP1	A-7
TP2	A-6
TP3	A-7
TP4	A-8
TP5	B-7
TP6	B-6
TP7	B-7
TP8	B-8
TP9	B-2
TP10	C-2
TP11	C-4
TP12	C-3
TP13	C-5
TP14	D-4
TP15	C-5
TP16	C-5
TP17	C-5
TP18	E-8
TP19	F-8
TP20	F-8
TP21	E-8
TP22	F-8
TP23	H-8
TP24	H-8
TP25	G-8
TP26	H-8
TP27	I-8
TP28	I-8
TP29	I-8
TP30	I-8
TP31	F-8
TP33	E-8
TP32	F-8
TP34	F-8
TP35	G-8
TP36	G-8
TP37	G-8
TP38	H-8
TP39	I-8
TP40	I-8
TP41	I-8
TP42	I-8
TP43	D-8
TP44	D-8

CP-130 BOARD (2/3)


HN-45
HN-45
(FOCUS)
HN-45
HN-45
(IRIS)
R-ENC (1-B) IN
R-ENC (1-A) IN
+5V OUT
GND
R-ENC (3-B) IN
R-ENC (3-A) IN
R-ENC (5-B) IN
R-ENC (5-A) IN
R-ENC (2-B) IN
R-ENC (2-A) IN
R-ENC (4-B) IN
R-ENC (4-A) IN
R-ENC (6-B) IN
R-ENC (6-A) IN
ON
CN7
CN8
CN9
+5V
-9V
+9V
μPC339C
TC40H074F
TC40H004F
TC74HC697AP
μPC4062G2
μPC4064G
TC74HC123AP
SN74HC74ANS
HD46508PA
IC17
TP18
R-ENC SELECT
TO 1/3
IDRQ-B
CLK-B
CS AD
AG A1
WR-B
RESET-B
RV111:EN PULSE WIDTH
TP43
MASTER BLACK IN
R-WHT
R-BLK
B-WHT
B-BLK
REF OUT
A-GND
SW-526
D0-D7
IC102
IC103
IC104
IC105

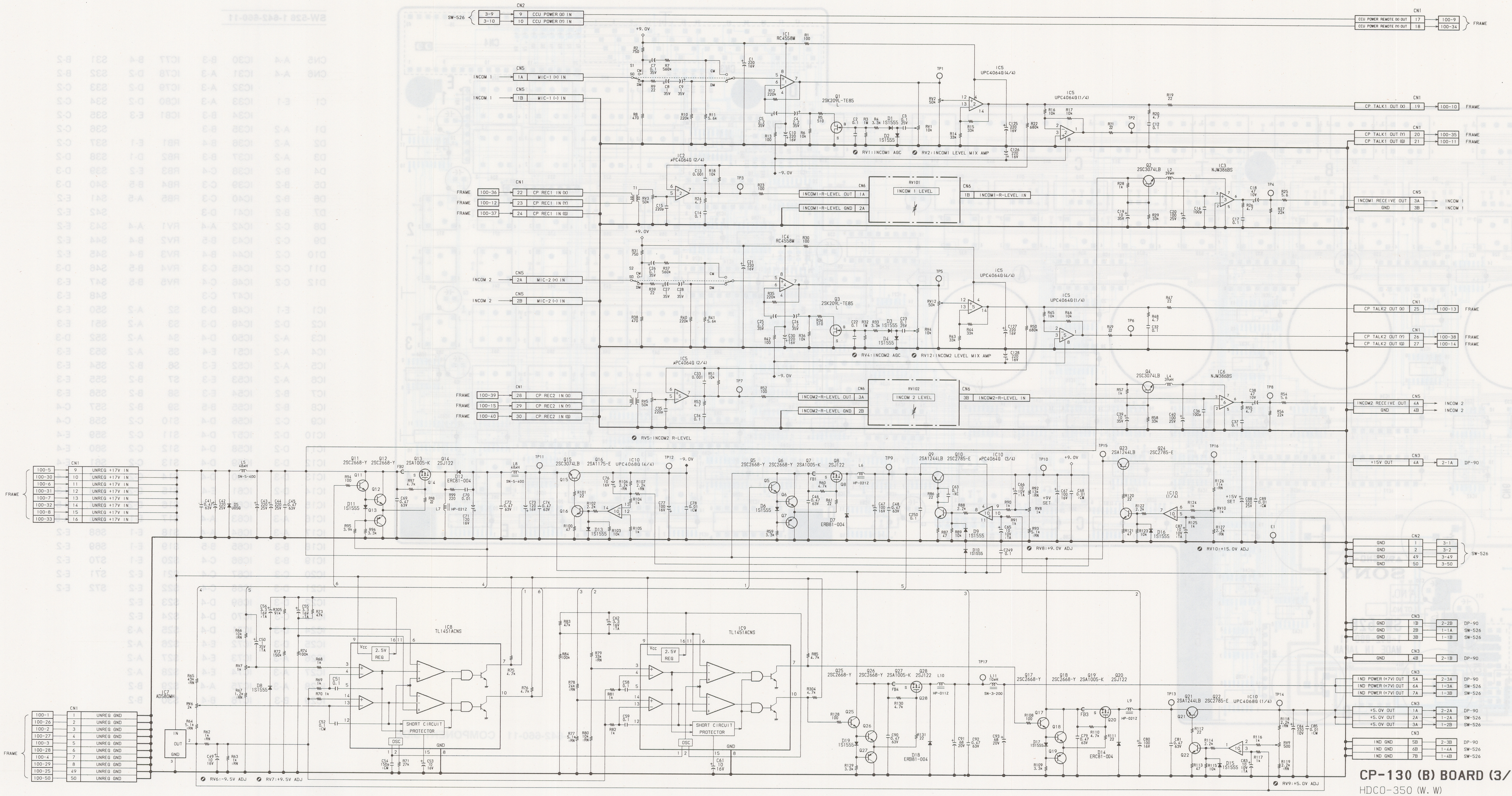
CP-130 (B) BOARD (2/3)
HDCO-350 (W. W)
B-HDCO350-CP130(WW2)

1
2
3
4
5

C-5 C-5 C-5

A | B | C | D | E | F | G | H | I | J | K | L

CP-130 BOARD (3/3)

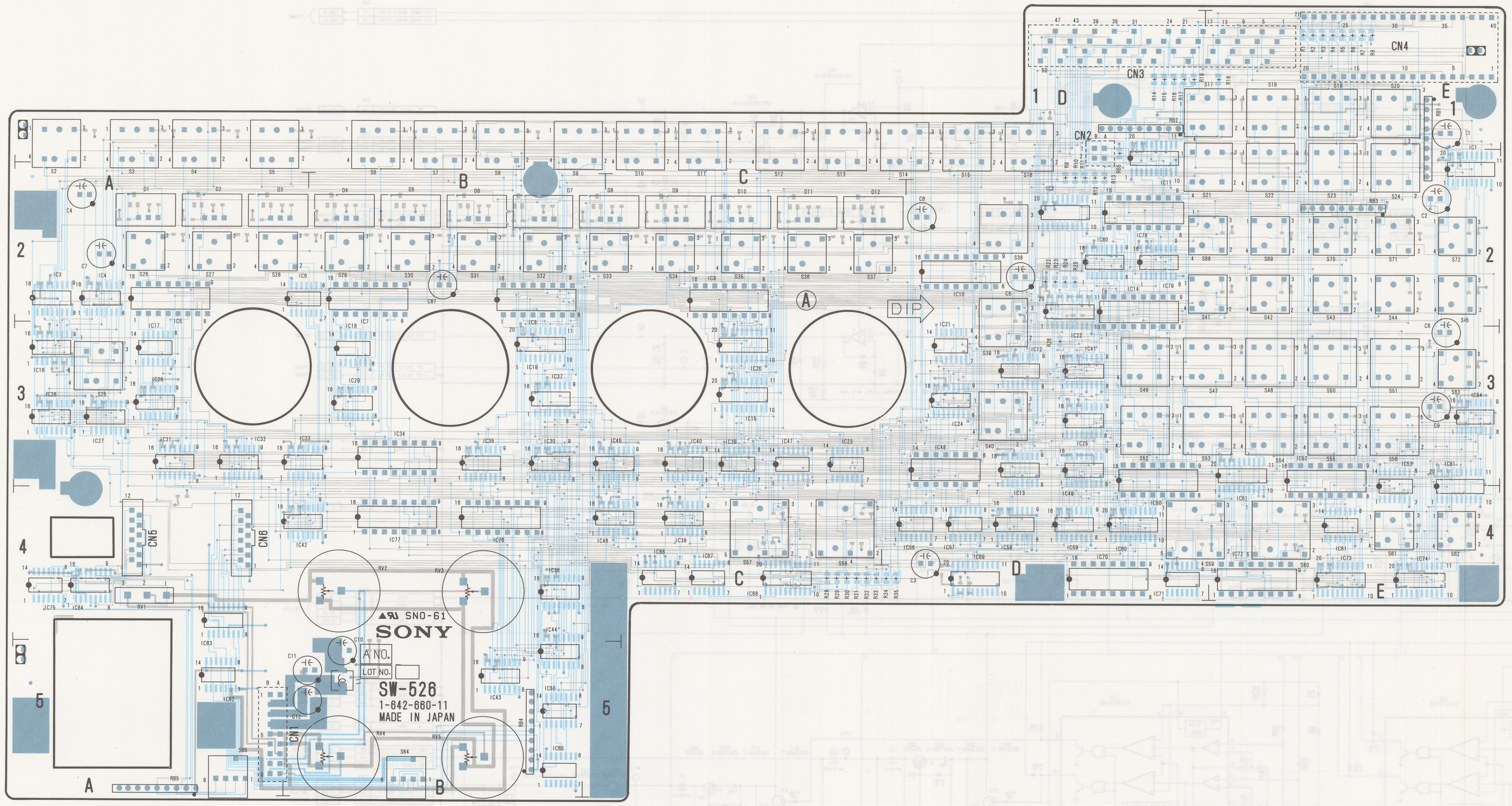

SW-526
3-9
3-10
CN2
9 CCU POWER (X) IN
10 CCU POWER (Y) IN
INCOM 1
CN5
1A MIC-1 (+) IN
1B MIC-1 (-) IN
FRAME
CN1
100-36 22 CP REC1 IN (X)
100-12 23 CP REC1 IN (Y)
100-37 24 CP REC1 IN (G)
INCOM 2
2A MIC-2 (+) IN
2B MIC-2 (-) IN
100-39 28 CP REC2 IN (X)
100-15 29 CP REC2 IN (Y)
100-40 30 CP REC2 IN (G)
100-5 9 UNREG +17V IN
100-30 10 UNREG +17V IN
100-6 11 UNREG +17V IN
100-31 12 UNREG +17V IN
100-7 13 UNREG +17V IN
100-32 14 UNREG +17V IN
100-8 15 UNREG +17V IN
100-33 16 UNREG +17V IN
100-1 1 UNREG GND
100-26 2 UNREG GND
100-2 3 UNREG GND
100-27 4 UNREG GND
100-3 5 UNREG GND
100-28 6 UNREG GND
100-4 7 UNREG GND
100-29 8 UNREG GND
100-25 49 UNREG GND
100-50 50 UNREG GND
IC7 AD580MH
IN OUT GND
IC8 TL1451ACNS
IC9 TL1451ACNS
SHORT CIRCUIT PROTECTOR
OSC
2.5V REG
RV6:-9.5V ADJ
RV7:+9.5V ADJ
RV1:INCOM1 AGC
RV2:INCOM1 LEVEL MIX AMP
RV4:INCOM2 AGC
RV12:INCOM2 LEVEL MIX AMP
RV5:INCOM2 R-LEVEL
RV8:+9.0V ADJ
RV10:+15.0V ADJ
RV9:+5.0V ADJ
RV101 INCOM 1 LEVEL
RV102 INCOM 2 LEVEL
INCOM1-R-LEVEL OUT
INCOM1-R-LEVEL GND
INCOM1-R-LEVEL IN
INCOM2-R-LEVEL OUT
INCOM2-R-LEVEL GND
INCOM2-R-LEVEL IN
CCU POWER REMOTE (X) OUT 17 100-9
CCU POWER REMOTE (Y) OUT 18 100-34
CP TALK1 OUT (X) 19 100-10
CP TALK1 OUT (Y) 20 100-35
CP TALK1 OUT (G) 21 100-11
INCOM1 RECEIVE OUT 3A INCOM 1
GND 3B INCOM 1
CP TALK2 OUT (X) 25 100-13
CP TALK2 OUT (Y) 26 100-38
CP TALK2 OUT (G) 27 100-14
INCOM2 RECEIVE OUT 4A INCOM 2
GND 4B INCOM 2
CN3
+15V OUT 4A 2-1A DP-90
GND 1 3-1
GND 2 3-2
GND 49 3-49
GND 50 3-50
GND 1B 2-2B DP-90
GND 2B 1-1A SW-526
GND 3B 1-1B SW-526
GND 4B 2-1B DP-90
IND POWER (+7V) OUT 5A 2-3A DP-90
IND POWER (+7V) OUT 6A 1-3A SW-526
IND POWER (+7V) OUT 7A 1-3B SW-526
+5.0V OUT 1A 2-2A DP-90
+5.0V OUT 2A 1-2A SW-526
+5.0V OUT 3A 1-2B SW-526
IND GND 5B 2-3B DP-90
IND GND 6B 1-4A SW-526
IND GND 7B 1-4B SW-526

CP-130 (B) BOARD (3/3)

HDCO-350 (W. W)

B-HDCO350-CP130/M#3

SW-526 BOARD

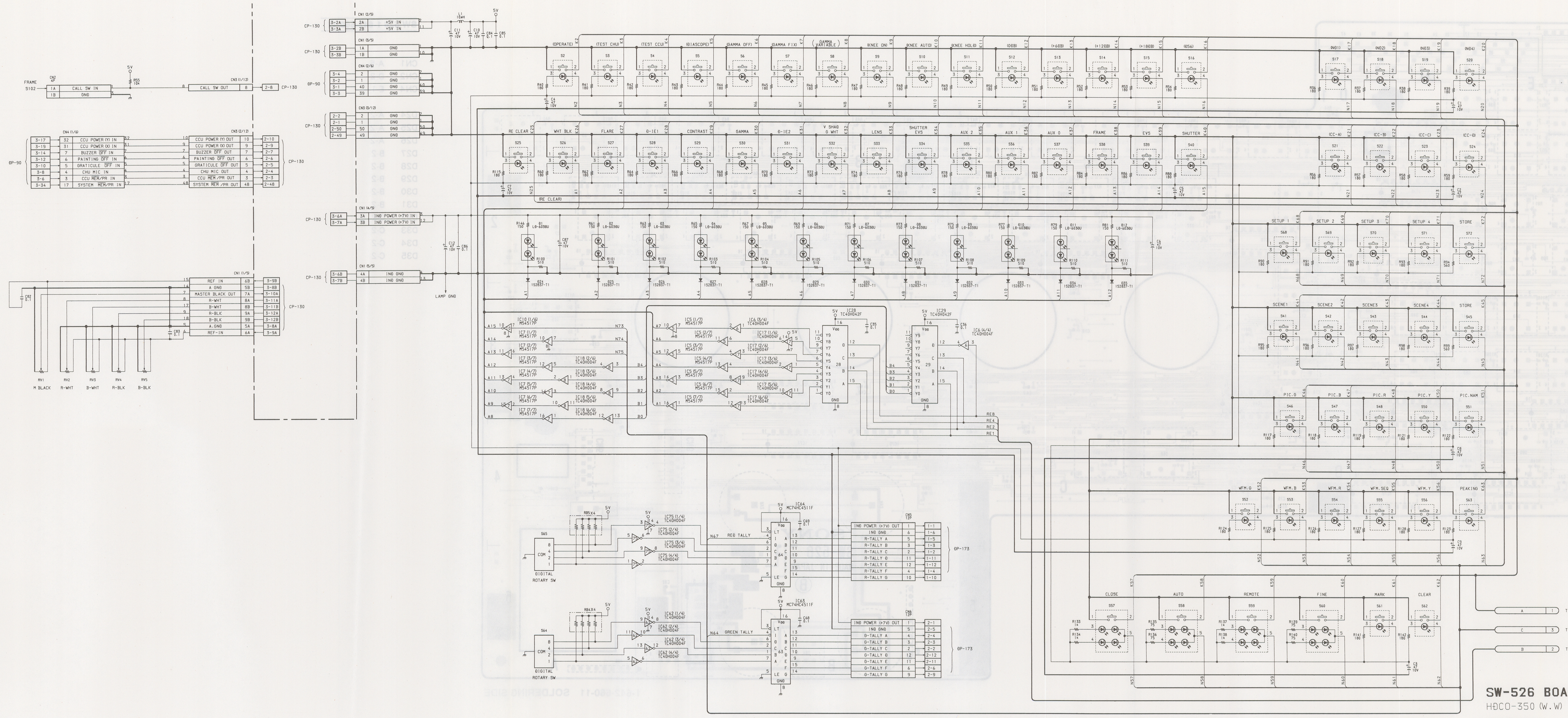


1-642-660-11 COMPONENT SIDE

SW-526 1-642-660-11

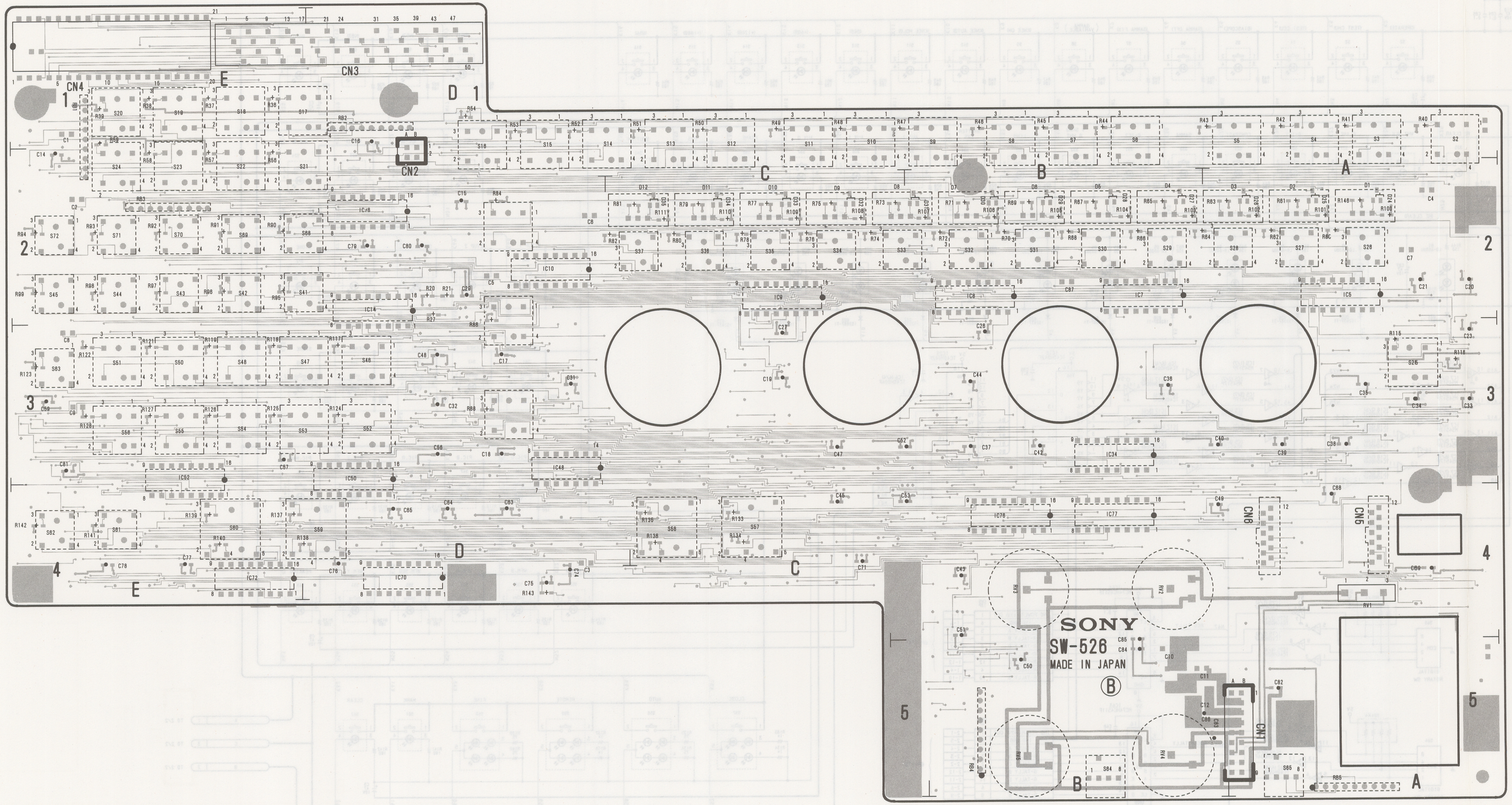
CN5	A-4	IC30	B-3	IC77	B-4	S31	B-2
CN6	A-4	IC31	A-3	IC78	D-2	S32	B-2
		IC32	A-3	IC79	D-2	S33	C-2
C1	E-1	IC33	A-3	IC80	D-2	S34	C-2
		IC34	B-3	IC81	E-3	S35	C-2
D1	A-2	IC35	B-3			S36	C-2
D2	A-2	IC36	B-4	RB1	E-1	S37	C-2
D3	A-2	IC37	B-3	RB2	D-1	S38	D-2
D4	B-2	IC38	C-4	RB3	E-2	S39	D-3
D5	B-2	IC39	C-3	RB4	B-5	S40	D-3
D6	B-2	IC40	C-3	RB5	A-5	S41	E-2
D7	B-2	IC41	D-3			S42	E-2
D8	C-2	IC42	A-4	RV1	A-4	S43	E-2
D9	C-2	IC43	B-5	RV2	B-4	S44	E-2
D10	C-2	IC44	B-4	RV3	B-4	S45	E-2
D11	C-2	IC45	C-3	RV4	B-5	S46	D-3
D12	C-2	IC46	C-4	RV5	B-5	S47	E-3
		IC47	C-3			S48	E-3
IC1	E-1	IC48	D-3	S2	A-2	S50	E-3
IC2	D-2	IC49	D-3	S3	A-2	S51	E-3
IC3	A-2	IC50	D-4	S4	A-2	S52	D-3
IC4	A-2	IC51	E-4	S5	A-2	S53	E-3
IC5	A-2	IC52	E-3	S6	B-2	S54	E-3
IC6	A-2	IC53	E-3	S7	B-2	S55	E-3
IC7	B-2	IC54	E-3	S8	B-2	S56	E-3
IC8	B-2	IC55	B-5	S9	B-2	S57	C-4
IC9	C-2	IC56	D-4	S10	C-2	S58	C-4
IC10	D-2	IC57	D-4	S11	C-2	S59	E-4
IC11	D-2	IC58	D-4	S12	C-2	S60	E-4
IC12	D-3	IC59	D-4	S13	C-2	S61	E-4
IC13	D-3	IC60	D-4	S14	C-2	S62	E-4
IC14	D-2	IC61	E-4	S15	D-2	S63	E-3
IC15	C-3	IC62	A-5	S16	D-2	S64	B-5
IC16	A-3	IC63	A-4	S17	E-1	S65	A-5
IC17	A-3	IC64	A-4	S18	E-1	S68	E-2
IC18	B-3	IC65	B-5	S19	E-1	S69	E-2
IC19	B-3	IC66	C-4	S20	E-1	S70	E-2
IC20	C-3	IC67	C-4	S21	E-2	S71	E-2
IC21	D-3	IC68	C-4	S22	E-2	S72	E-2
IC22	D-3	IC69	D-4	S23	E-2		
IC23	C-3	IC70	D-4	S24	E-2		
IC24	D-3	IC71	D-4	S25	A-3		
IC25	D-3	IC72	E-4	S26	A-2		
IC26	A-3	IC73	E-4	S27	A-2		
IC27	A-3	IC74	E-4	S28	A-2		
IC28	A-3	IC75	A-4	S29	B-2		
IC29	B-3	IC76	B-4	S30	B-2		

SW-526 BOARD (1/2)


FRAME
S102
CN2 4P
1A CALL SW IN
1B GND
5V
R55 10k
CN3 (1/12)
CALL SW OUT 8
2-8 CP-130
CN4 (1/6)
DP-90
3-17 32 CCU POWER (Y) IN
3-19 31 CCU POWER (X) IN
3-14 7 BUZZER OFF IN
3-12 6 PAINTING OFF IN
3-10 5 GRATICULE OFF IN
3-8 4 CHU MIC IN
3-6 3 CCU MEM/PR IN
3-34 17 SYSTEM MEM/PR IN
CN3 (2/12)
CCU POWER (Y) OUT 10 2-10
CCU POWER (X) OUT 9 2-9
BUZZER OFF OUT 7 2-7
PAINTING OFF OUT 6 2-6
GRATICULE OFF OUT 5 2-5
CHU MIC OUT 4 2-4
CCU MEM/PR OUT 3 2-3
SYSTEM MEM/PR OUT 48 2-48
CP-130
CN1 (1/5)
REF IN 6B 3-9B
A GND 5B 3-8B
MASTER BLACK OUT 7A 3-10A
R-WHT 8A 3-11A
B-WHT 8B 3-11B
R-BLK 9A 3-12A
B-BLK 9B 3-12B
A.GND 5A 3-8A
REF-IN 6A 3-9A
CP-130
C82 0.1
C83 0.1
RV1 M BLACK
RV2 R-WHT
RV3 B-WHT
RV4 R-BLK
RV5 B-BLK
CN1 (2/5)
CP-130 3-2A 2A +5V IN
3-3A 2B +5V IN
CN1 (3/5)
CP-130 3-2B 1A GND
3-3B 1B GND
CN4 (2/6)
DP-90 3-4 2 GND
3-2 1 GND
3-1 40 GND
3-3 39 GND
CN3 (3/12)
CP-130 2-2 2 GND
2-1 1 GND
2-50 50 GND
2-49 49 GND
CN1 (4/5)
CP-130 3-6A 3A IND POWER (+7V) IN
3-7A 3B IND POWER (+7V) IN
CN1 (5/5)
CP-130 3-6B 4A IND GND
3-7B 4B IND GND
LAMP GND
L1 10μH
5V
C11 47 10V
C10 47 10V
C84 0.1
C85 0.1
C12 47 10V
C86 0.1
(OPERATE) S2
(TEST CHU) S3
(TEST CCU) S4
(DIASCOPE) S5
(GAMMA OFF) S6
(GAMMA FIX) S7
(GAMMA VARIABLE) S8
(KNEE ON) S9
(KNEE AUTO) S10
(KNEE HOLD) S11
(0DB) S12
(+6DB) S13
(+12DB) S14
(+18DB) S15
(D56) S16
(ND1) S17
(ND2) S18
(ND3) S19
(ND4) S20
RE CLEAR S25
WHT BLK S26
FLARE S27
D-IE1 S28
CONTRAST S29
GAMMA S30
D-IE2 S31
V SHAD G WHT S32
LENS S33
SHUTTER EVS S34
AUX 2 S35
AUX 1 S36
AUX 0 S37
FRAME S38
EVS S39
SHUTTER S40
(CC-A) S21
(CC-B) S22
(CC-C) S23
(CC-D) S24
SETUP 1 S68
SETUP 2 S69
SETUP 3 S70
SETUP 4 S71
STORE S72
SCENE1 S41
SCENE2 S42
SCENE3 S43
SCENE4 S44
STORE S45
PIC.G S46
PIC.B S47
PIC.R S48
PIC.Y S50
PIC.NAM S51
WFM.G S52
WFM.B S53
WFM.R S54
WFM.SEQ S55
WFM.Y S56
PEAKING S63
CLOSE S57
AUTO S58
REMOTE S59
FINE S60
MARK S61
CLEAR S62
R133 1k
R134 1k
R135 75
R136 75
R137 1k
R138 1k
R139 75
R140 75
R141 180
R142 180
C3 47 10V
A 1 TO 2/2
C 3 TO 2/2
B 2 TO 2/2
IC10 M54517P
IC7 M54517P
IC18 TC40H004F
IC5 M54517P
IC6 TC40H004F
IC17 TC40H004F
IC28 TC40H042F
IC29 TC40H042F
IC4 TC40H004F
RE CLEAR
S65
DIGITAL ROTARY SW
RB5X4
5V
IC75 (1/4) TC40H004F
IC75 (2/4) TC40H004F
IC75 (3/4) TC40H004F
IC75 (4/4) TC40H004F
N67 RED TALLY
IC64 MC74HC4511F
C69 0.1
CN5 12P
IND POWER (+7V) OUT 1 1-1
IND GND 6 1-6
R-TALLY A 5 1-5
R-TALLY B 3 1-3
R-TALLY C 2 1-2
R-TALLY D 11 1-11
R-TALLY E 12 1-12
R-TALLY F 4 1-4
R-TALLY G 10 1-10
DP-173
S64
DIGITAL ROTARY SW
RB4X4
IC62 (1/4) TC40H004F
IC62 (2/4) TC40H004F
IC62 (3/4) TC40H004F
IC62 (4/4) TC40H004F
N64 GREEN TALLY
IC63 MC74HC4511F
C68 0.1
CN6 12P
IND POWER (+7V) OUT 1 2-1
IND GND 5 2-5
G-TALLY A 4 2-4
G-TALLY B 3 2-3
G-TALLY C 2 2-2
G-TALLY D 12 2-12
G-TALLY E 11 2-11
G-TALLY F 6 2-6
G-TALLY G 9 2-9
DP-173

SW-526 BOARD (1/2)
HDCO-350 (W.W)
B-¥HDC0350-SW526/M

SW-526 BOARD


CN3
CN4
CN2
CN1
CN5
CN6
SONY
SW-526
MADE IN JAPAN
Ⓑ
A
B
C
D
E
1
2
3
4
5

1-642-660-11 SOLDERING SIDE

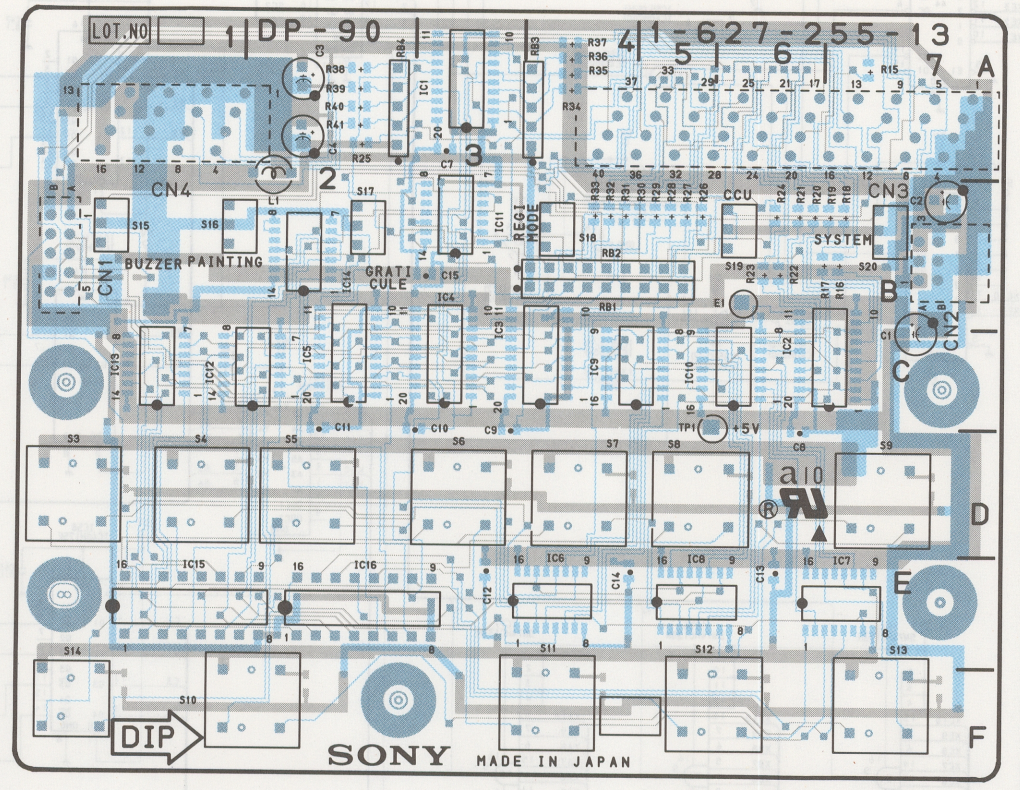
SW-526 1-642-660-11

CN1	A-5
CN2	D-2
CN4	E-1
D24	A-2
D25	A-2
D26	A-2
D27	B-2
D28	B-2
D29	B-2
D30	B-2
D31	B-2
D32	C-2
D33	C-2
D34	C-2
D35	C-2

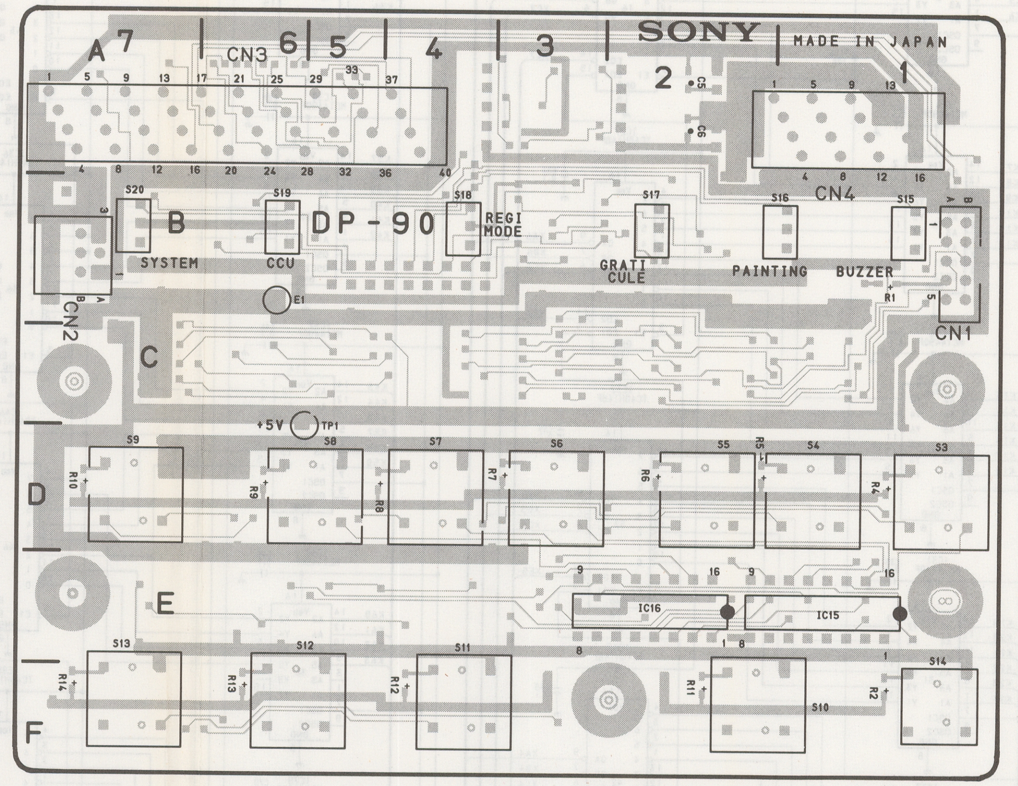
SW-526 BOARD (2/2)

SW-526 BOARD (2/2)
HDCO-350 (W.W)

DP-90 BOARD

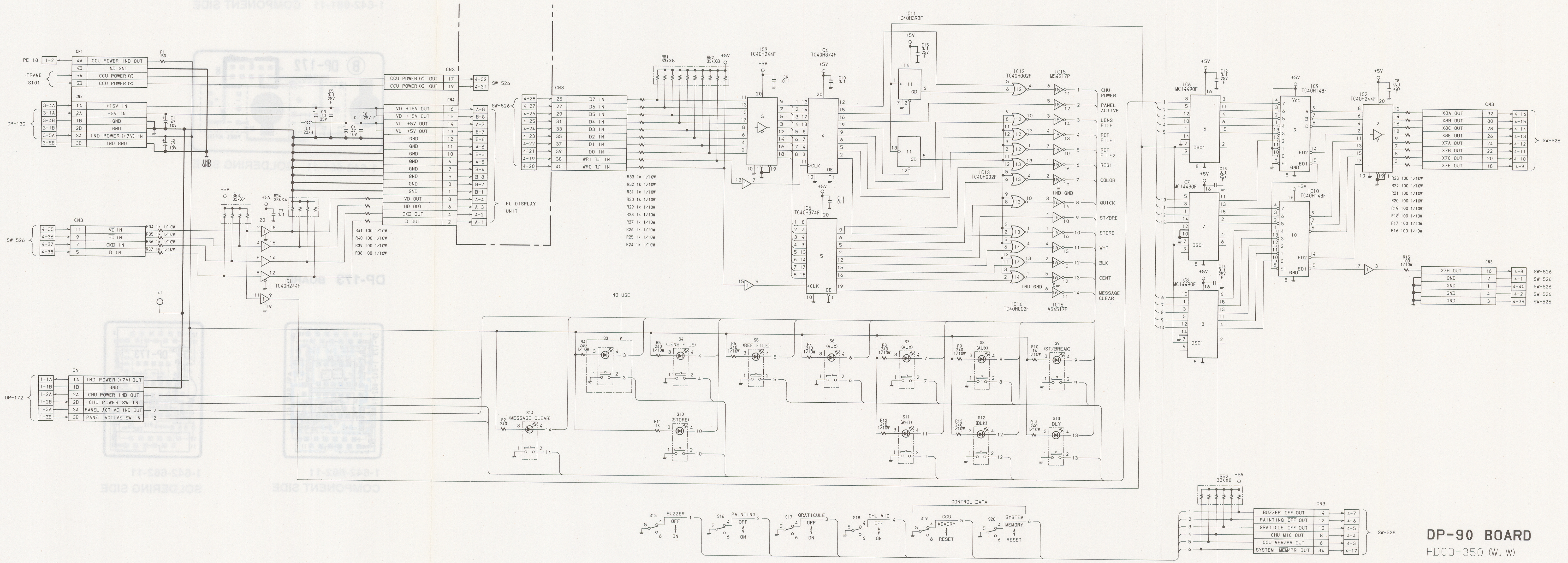

LOT.NO
DP-90
1-627-255-13
1
2
3
4
5
6
7
A
B
C
D
E
F
CN1
CN2
CN3
CN4
BUZZER
PAINTING
GRATI CULE
REGI MODE
CCU
SYSTEM
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
RB1
RB2
RB3
RB4
TP1
+5V
E1
DIP
SONY
MADE IN JAPAN

1-627-255-13 COMPONENT SIDE


SONY
MADE IN JAPAN
DP-90
CN1
CN2
CN3
CN4
SYSTEM
CCU
REGI MODE
GRATI CULE
PAINTING
BUZZER
+5V
TP1
IC15
IC16
1
2
3
4
5
6
7
A
B
C
D
E
F

1-627-255-13 SOLDERING SIDE

DP-90 BOARD

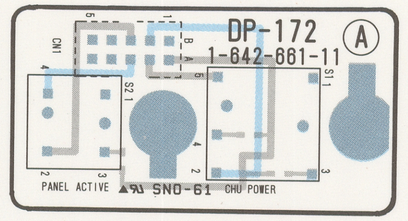

PE-18
1-2
CN1
4A CCU POWER IND OUT
4B IND GND
5A CCU POWER (Y)
5B CCU POWER (X)
FRAME
S101
R1 150
CN2
CP-130
3-4A 1A +15V IN
3-1A 2A +5V IN
3-4B 1B GND
3-1B 2B GND
3-5A 3A IND POWER (+7V) IN
3-5B 3B IND GND
C1 47 10V
C2 47 10V
IND GND
C5 0.1 25V F
C3 10 35V
L1 22μH
C6 0.1 25V F
C4 47 10V
CN3
CCU POWER (Y) OUT 17 4-32
CCU POWER (X) OUT 19 4-31
SW-526
CN4
VD +15V OUT 16 A-8
VD +15V OUT 15 B-8
VL +5V OUT 14 A-7
VL +5V OUT 13 B-7
GND 12 B-6
GND 11 A-6
GND 10 B-5
GND 9 A-5
GND 7 B-4
GND 5 B-3
GND 3 B-2
GND 1 B-1
VD OUT 8 A-4
HD OUT 6 A-3
CKD OUT 4 A-2
D OUT 2 A-1
EL DISPLAY UNIT
R41 100 1/10W
R40 100 1/10W
R39 100 1/10W
R38 100 1/10W
+5V
RB3 33k X4
RB4 33k X4
C7 0.1
IC1 TC40H244F
CN3
SW-526
4-35 11 VD IN
4-36 9 HD IN
4-37 7 CKD IN
4-38 5 D IN
R34 1k 1/10W
R35 1k 1/10W
R36 1k 1/10W
R37 1k 1/10W
E1
CN1
DP-172
1-1A 1A IND POWER (+7V) OUT
1-1B 1B GND
1-2A 2A CHU POWER IND OUT
1-2B 2B CHU POWER SW IN
1-3A 3A PANEL ACTIVE IND OUT
1-3B 3B PANEL ACTIVE SW IN
CN3
4-28 25 D7 IN
4-27 27 D6 IN
4-26 29 D5 IN
4-25 31 D4 IN
4-24 33 D3 IN
4-23 35 D2 IN
4-22 37 D1 IN
4-21 39 D0 IN
4-19 38 WR1 IN
4-20 40 WR0 IN
R33 1k 1/10W
R32 1k 1/10W
R31 1k 1/10W
R30 1k 1/10W
R29 1k 1/10W
R28 1k 1/10W
R27 1k 1/10W
R26 1k 1/10W
R25 1k 1/10W
R24 1k 1/10W
RB1 33k X8
RB2 33k X8
IC3 TC40H244F
C9 0.1
IC4 TC40H374F
C10 0.1
IC5 TC40H374F
C11 0.1
CLK
OE
IC11 TC40H393F
C15 0.1 25V F
QD
IC12 TC40H002F
IC13 TC40H002F
IC14 TC40H002F
IC15 M54517P
IC16 M54517P
IND GND
CHU POWER
PANEL ACTIVE
LENS FILE
REF FILE1
REF FILE2
REG1
COLOR
QUICK
ST/BRE
STORE
WHT
BLK
CENT
MESSAGE CLEAR
NO USE
R4 240 1/10W
S3
R5 240 1/10W
S4 (LENS FILE)
R6 240 1/10W
S5 (REF FILE)
R7 240 1/10W
S6 (AUX)
R8 240 1/10W
S7 (AUX)
R9 240 1/10W
S8 (AUX)
R10 1k 1/10W
S9 (ST/BREAK)
R2 240
S14 (MESSAGE CLEAR)
R11 1k
S10 (STORE)
R12 240 1/10W
S11 (WHT)
R13 240 1/10W
S12 (BLK)
R14 240 1/10W
S13 DLY
CONTROL DATA
S15 BUZZER OFF ON
S16 PAINTING OFF ON
S17 GRATICULE OFF ON
S18 CHU MIC OFF ON
S19 CCU MEMORY RESET
S20 SYSTEM MEMORY RESET
IC6 MC14490F
C12 0.1 25V F
IC7 MC14490F
C13 0.1 25V F
IC8 MC14490F
C14 0.1 25V F
OSC1
IC9 TC40H148F
IC10 TC40H148F
Vcc
GND
EO1
EO2
EI
IC2 TC40H244F
C8 0.1 25V F
CN3
X8A OUT 32 4-16
X8B OUT 30 4-15
X8C OUT 28 4-14
X8E OUT 26 4-13
X7A OUT 24 4-12
X7B OUT 22 4-11
X7C OUT 20 4-10
X7E OUT 18 4-9
SW-526
R23 100 1/10W
R22 100 1/10W
R21 100 1/10W
R20 100 1/10W
R19 100 1/10W
R18 100 1/10W
R17 100 1/10W
R16 100 1/10W
R15 100 1/10W
CN3
X7H OUT 16 4-8 SW-526
GND 2 4-1 SW-526
GND 1 4-40 SW-526
GND 4 4-2 SW-526
GND 3 4-39 SW-526
RB2 33KX8
+5V
CN3
BUZZER OFF OUT 14 4-7
PAINTING OFF OUT 12 4-6
GRATICLE OFF OUT 10 4-5
CHU MIC OUT 8 4-4
CCU MEM/PR OUT 6 4-3
SYSTEM MEM/PR OUT 34 4-17
SW-526

DP-90 BOARD

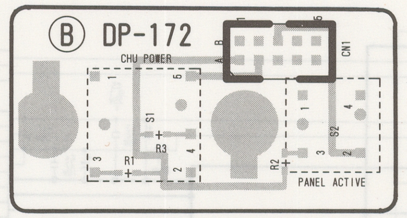
HDCO-350 (W. W)

B-HDC0350-DP90/M

DP-172 BOARD

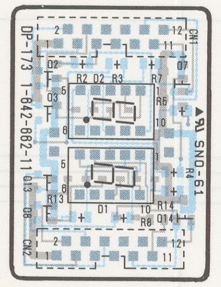

DP-172
Ⓐ
1-642-661-11
CN1
S2
S1
PANEL ACTIVE
SNO-61
CHU POWER

1-642-661-11 COMPONENT SIDE

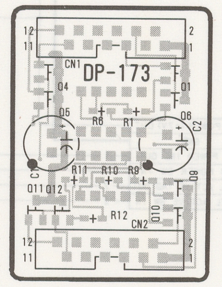

Ⓑ DP-172
CHU POWER
CN1
S1
S2
R1
R2
R3
PANEL ACTIVE

1-642-661-11 SOLDERING SIDE

DP-173 BOARD

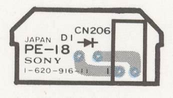

DP-173 1-642-662-11
CN1
CN2
SNO-61
D1
D2
R2
R3
R4
R5
R7
R8
R13
R14
Q3
Q7
Q8
Q13
Q14

1-642-662-11
COMPONENT SIDE


DP-173
CN1
CN2
Q1
Q4
Q5
Q6
Q8
Q10
Q11
Q12
R1
R6
R9
R10
R11
R12
C2
C3

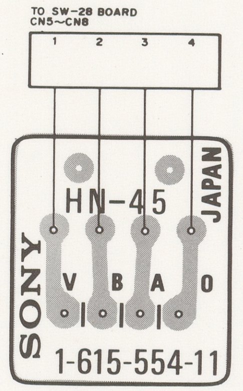
1-642-662-11
SOLDERING SIDE

PE-18 BOARD


JAPAN
PE-18
SONY
1-620-916-11
D1
CN206

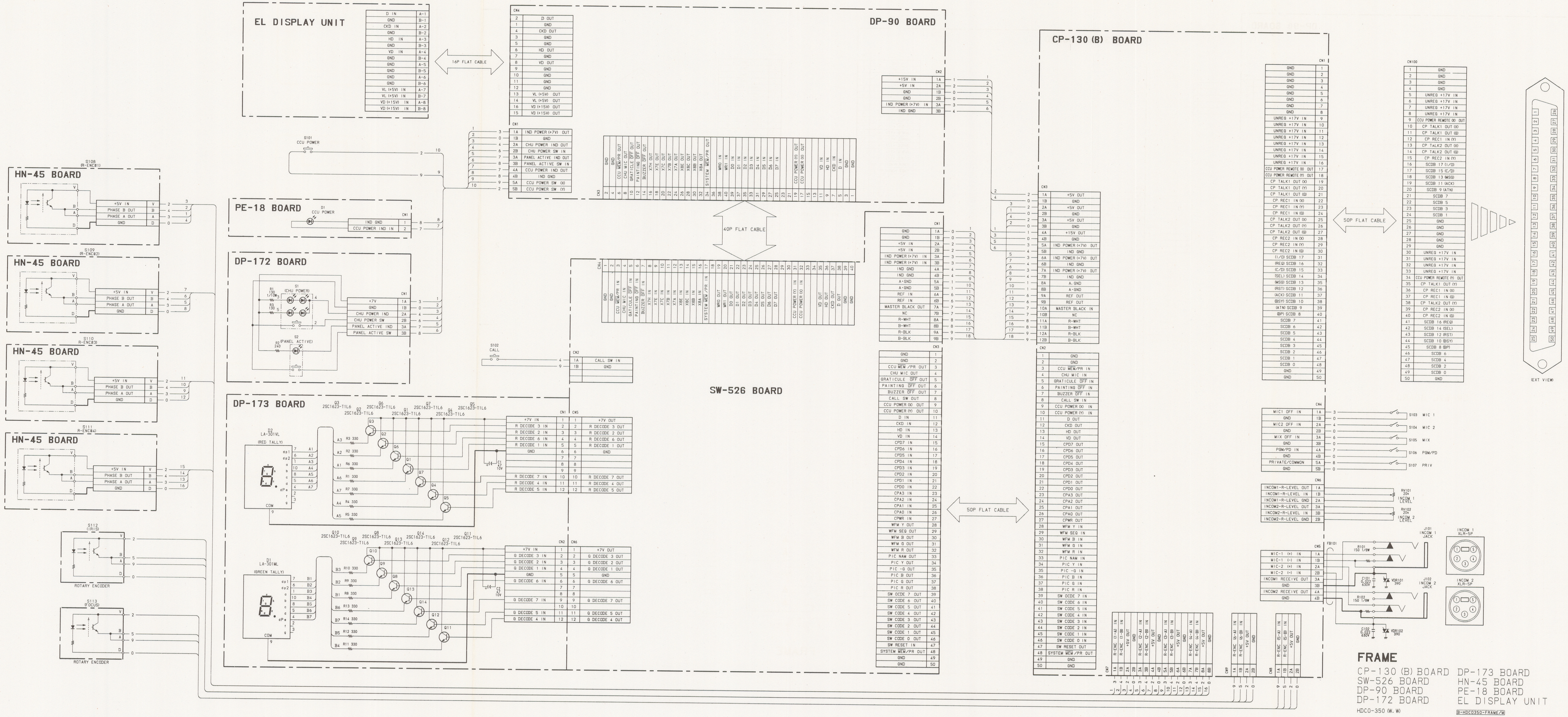
1-620-916-11
SOLDERING SIDE

HN-45 BOARD


TO SW-28 BOARD
CN5~CN8
1
2
3
4
HN-45
JAPAN
SONY
V
B
A
O
1-615-554-11

1-615-554-11
SOLDERING SIDE

FRAME
DP-172 BOARD
DP-173 BOARD
PE-18 BOARD
HN-45 BOARD


EL DISPLAY UNIT
16P FLAT CABLE
DP-90 BOARD
CP-130 (B) BOARD
HN-45 BOARD
HN-45 BOARD
HN-45 BOARD
HN-45 BOARD
PE-18 BOARD
DP-172 BOARD
DP-173 BOARD
SW-526 BOARD
40P FLAT CABLE
50P FLAT CABLE
50P FLAT CABLE
S101 CCU POWER
S102 CALL
S112 (IRIS)
S113 (FOCUS)
ROTARY ENCODER
ROTARY ENCODER
S103 MIC 1
S104 MIC 2
S105 MIX
S106 PGM/PD
S107 PRIV
INCOM 1 XLR-5F
INCOM 2 XLR-5F
(EXT VIEW)

FRAME
CP-130 (B) BOARD DP-173 BOARD
SW-526 BOARD HN-45 BOARD
DP-90 BOARD PE-18 BOARD
DP-172 BOARD EL DISPLAY UNIT
HDC0-350 (W, W)
B-HDC0350-FRAME/W

SECTION D
SPARE PARTS

PARTS INFORMATION

1. **Safety Related Component Warning**

   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

2. Replace parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to"accommodating the improved parts and/or engineering changes" or"standardization of genuine parts."
   - This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present."
   - Regarding engineering parts and diagrams changes in our engineering department, refer to Sony service bulletins and service manual supplements.

3. The parts marked with"S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Orders for parts marked with "O" will be processed, but allow for additional delivery time.

4. Item with no parts number and/or no description are not stocked because they are seldom required for routine service.

5. **Abbreviation**

All capacitors are in micro farads unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

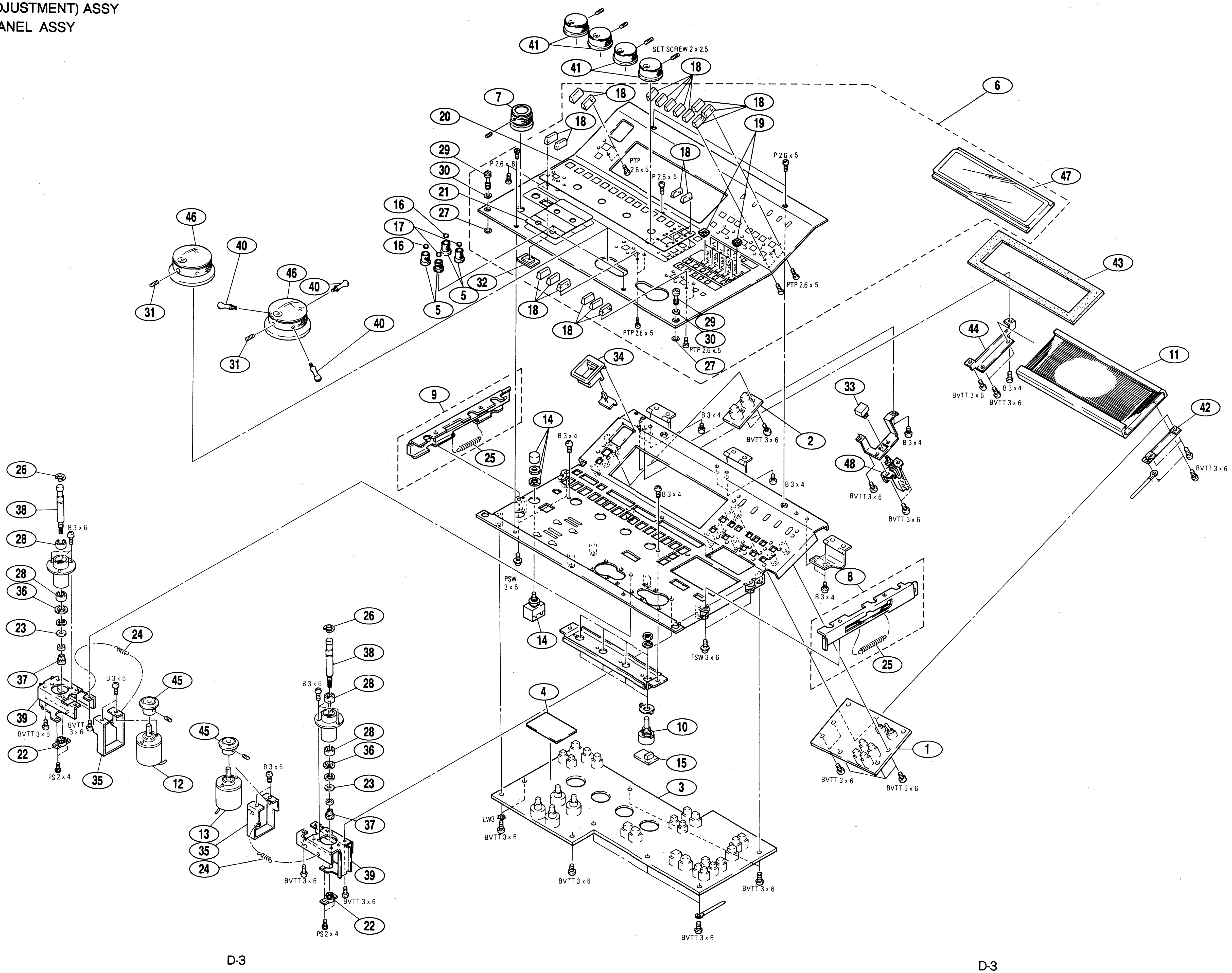
EXPLODED VIEW

PANEL UNIT BLOCK

No.	Part No.	SP	Description
1	A-7513-795-A	o	MOUNTED CIRCUIT BOARD, DP-90
2	A-8271-194-A	o	MOUNTED CIRCUIT BOARD, DP-172
3	A-8271-195-A	o	MOUNTED CIRCUIT BOARD, SW-526
4	A-8276-268-A	o	MOUNTED CIRCUIT BOARD, DP-173
5	X-2355-502-1	s	KNOB ASSY, CONTROL
6	X-3166-623-1	o	PANEL ASSY, CONTROL
7	X-3691-415-2	s	KNOB (INNER) ASSY
8	X-3693-534-1	o	GUIDE (RIGHT) ASSY, STAY
9	X-3693-535-1	o	GUIDE (LEFT) ASSY, STAY
10	1-464-485-11	s	ENCODER, ROTALY
11	1-464-765-12	s	DISPLAY UNIT, EL
12	1-466-031-21	s	ENCODER, ROTARY
13	1-466-031-31	s	ENCODER, ROTARY
14	1-570-172-11	s	SWITCH, PUSH (1 KEY) "CALL"
15	1-615-554-11	o	PRINTED CIRCUIT BOARD, HN-45
16	2-141-015-01	o	PLATE, COLOR (RED)
17	2-141-015-21	o	PLATE, COLOR (BLUE)
18	2-295-991-00	o	GUARD, SWITCH
19	3-175-400-01	o	GUARD (SQUARE 6-2), SWITCH
20	3-175-406-01	o	SHEET (C), LED
21	3-175-407-01	o	SHEET (D), LED
22	3-319-224-21	s	DAMPER, SMALL
23	3-451-162-00	s	WASHER
24	3-564-736-00	s	SPRING, TENSION
25	3-583-501-00	s	SPRING, TENSION
26	3-618-078-00	s	RING, RETAINING, CE TYPE
27	3-653-573-00	o	RING, O
28	3-656-948-00	s	BEARING, BALL
29	3-693-677-31	s	SCREW (M4X12), LID
30	3-701-442-11	s	WASHER, 4.5
31	3-701-511-00	s	SET SCREW, DOUBLE POINT 4X6
32	3-712-704-21	o	PLATE (SMALL), TRANSPARENT
33	3-715-610-01	s	KNOB, PS
34	3-715-611-03	o	GUARD, PS
35	3-733-054-02	o	BRACKET, RE
36	3-733-056-02	o	SPACER
37	3-733-057-01	o	TUBE, JOINT
38	3-733-058-02	o	SHAFT
39	3-733-059-01	o	BRACKET (A)
40	3-733-121-01	s	PIN, FOCUS
41	3-733-122-01	s	KNOB (B)
42	3-733-124-03	o	BRACKET (A), EL DISPLAY
43	3-733-127-01	s	CUSHION
44	3-733-128-01	o	BRACKET (B), EL DISPLAY
45	3-733-129-01	o	PLATE (B), CLUTCH
46	3-733-132-01	s	KNOB (A)
47	3-733-134-01	o	FILTER, EL
48	9-910-999-31	s	SWITCH, PUSH "CCU POWER"

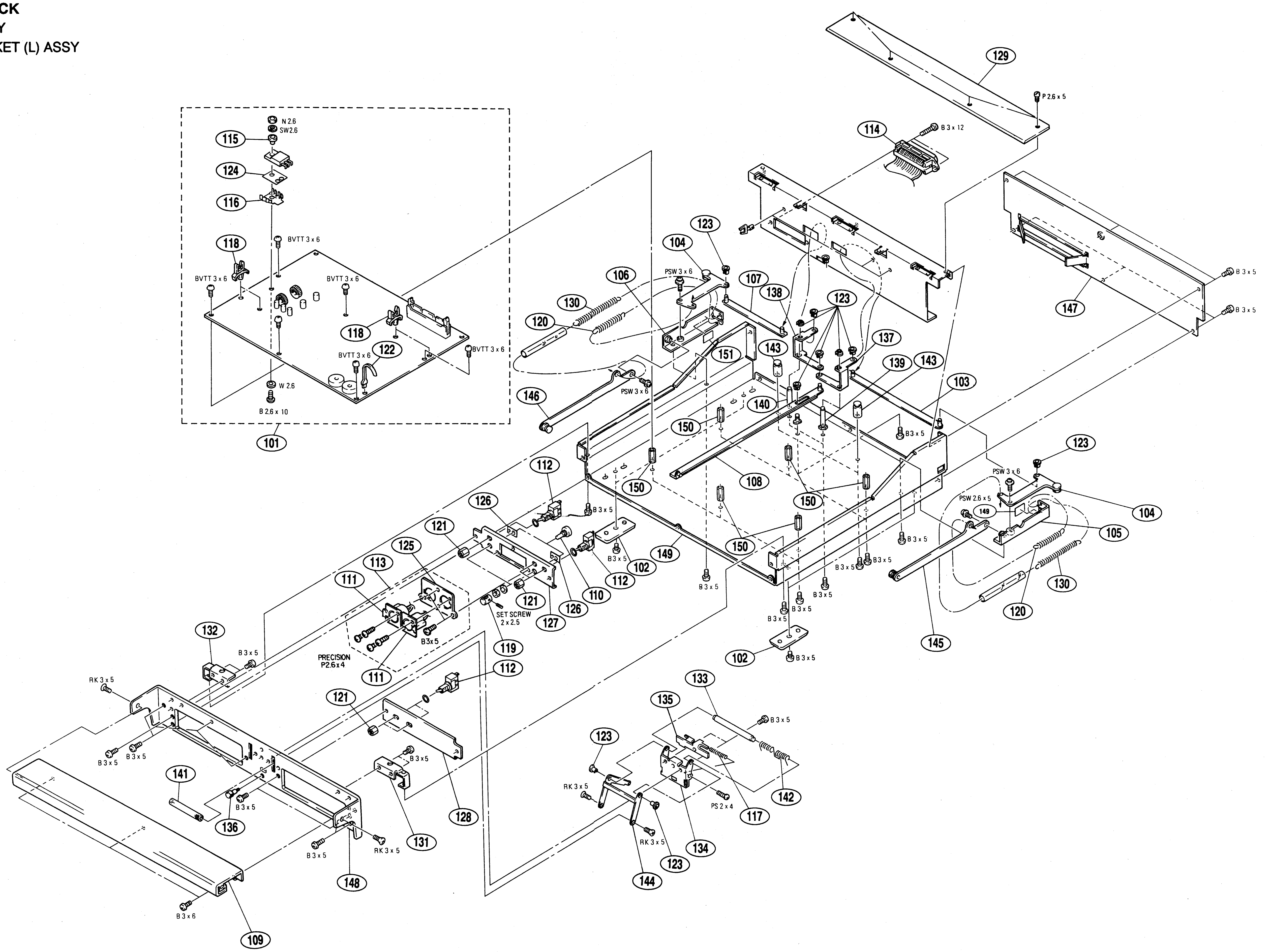
PANEL UNIT BLOCK

TORQUE (ADJUSTMENT) ASSY
CONTROL PANEL ASSY


41
41
SET SCREW 2 x 2.5
18
18
18
7
6
20
18
19
18
29
P 2.6 x 6
PTP 2.6 x 5
P 2.6 x 5
P 2.6 x 5
30
21
47
16
27
17
16
46
40
46
40
32
5
5
PTP 2.6 x 5
43
31
40
18
18
29
30
PTP 2.6 x 5
PTP 2.6 x 5
31
27
34
44
11
B 3 x 4
BVTT 3 x 6
BVTT 3 x 6
9
33
B 3 x 4
42
14
B 3 x 4
BVTT 3 x 6
2
B 3 x 4
B 3 x 4
25
48
BVTT 3 x 6
B 3 x 4
BVTT 3 x 6
BVTT 3 x 6
26
B 3 x 4
38
B 3 x 6
28
8
28
PSW 3 x 6
B 3 x 4
36
23
14
24
PSW 3 x 6
25
26
38
37
B 3 x 6
45
B 3 x 6
28
39
BVTT 3 x 6
BVTT 3 x 6
4
10
22
35
12
45
28
36
15
1
PS 2 x 4
B 3 x 6
23
3
BVTT 3 x 6
BVTT 3 x 6
13
35
37
LW3
BVTT 3 x 6
24
39
BVTT 3 x 6
BVTT 3 x 6
BVTT 3 x 6
BVTT 3 x 6
22
PS 2 x 4
BVTT 3 x 6

CABINET BLOCK

CABINET ASSY
INCOM BRACKET (L) ASSY


N 2.6
SW2.6
115
124
116
BVTT 3 x 6
118
BVTT 3 x 6
BVTT 3 x 6
118
122
BVTT 3 x 6
BVTT 3 x 6
W 2.6
B 2.6 x 10
101
129
P 2.6 x 5
114
B 3 x 12
123
104
PSW 3 x 6
106
107
138
123
130
120
151
143
137
139
143
103
147
B 3 x 5
B 3 x 5
146
PSW 3 x 6
140
150
B 3 x 5
123
112
150
108
150
PSW 3 x 6
104
PSW 2.6 x 5
149
105
B 3 x 5
126
121
B 3 x 5
125
113
111
102
149
150
112
110
B 3 x 5
B 3 x 5
B 3 x 5
B 3 x 5
130
121
126
127
SET SCREW
2 x 2.5
B3x5
B 3 x 5
B 3 x 5
120
145
102
B 3 x 5
119
132
B 3 x 5
PRECISION
P2.6x4
111
112
RK 3 x 5
121
133
135
B 3 x 5
123
B 3 x 5
B 3 x 5
B 3 x 5
141
RK 3 x 5
142
136
B 3 x 5
PS 2 x 4
117
128
131
RK 3 x 5
134
B 3 x 5
RK 3 x 5
123
148
144
B 3 x 6
109

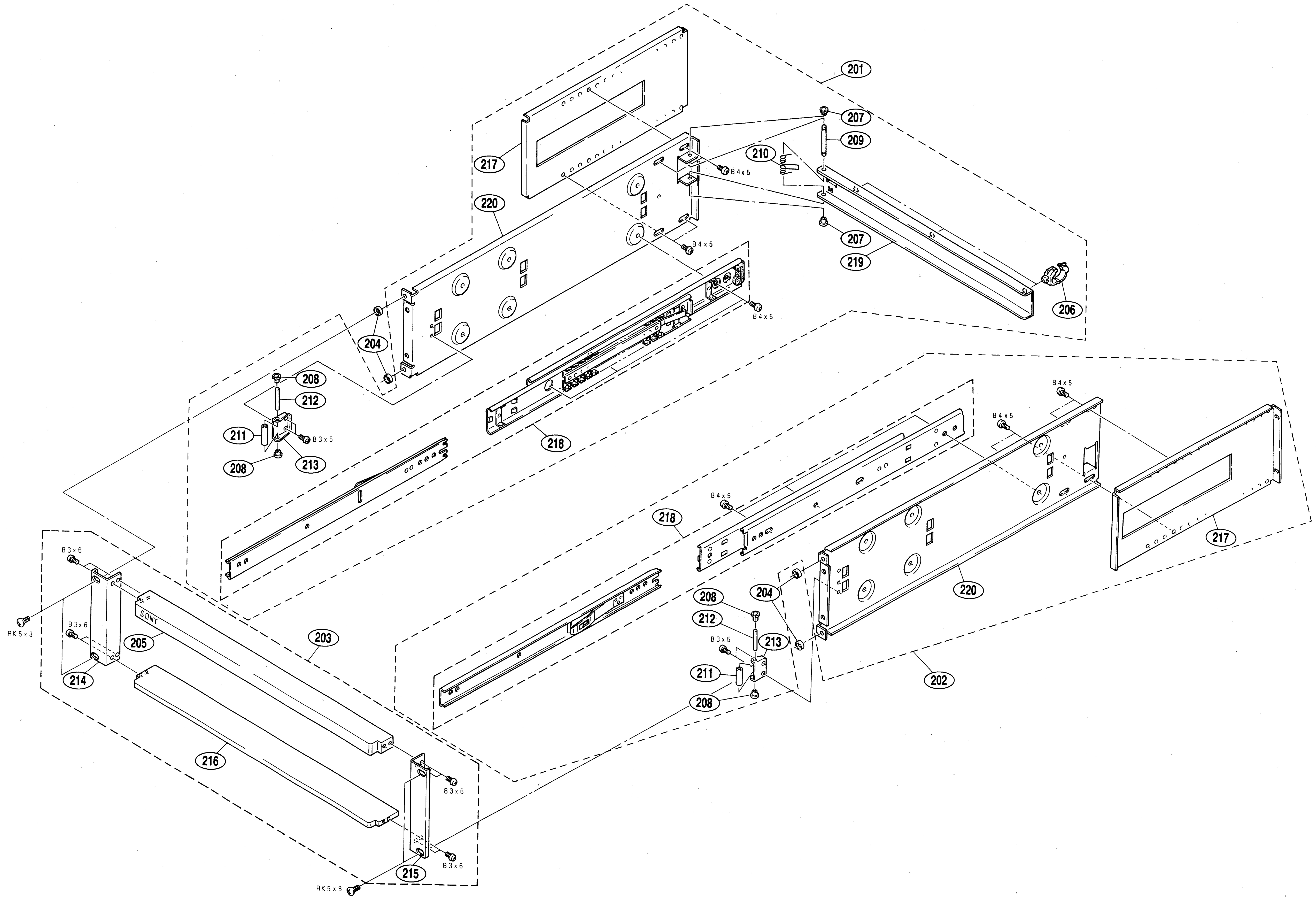
CABINET BLOCK

No.	Part No.	SP	Description
101	A-8271-193-A	o	MOUNTED CIRCUIT BOARD, CP-130(B)
102	X-3565-417-0	o	LEG ASSY
103	X-3693-562-1	o	LINK (R) ASSY
104	X-3693-563-1	o	LEVER ASSY, STOPPER
105	X-3693-564-1	o	PLATE (RIGHT) ASSY, INDICATION
106	X-3693-565-1	o	PLATE (LEFT) ASSY, INDICATION
107	X-3693-566-1	o	LINK (L) ASSY
108	X-3693-567-1	o	LINK (C) ASSY
109	X-3693-568-1	o	REST ASSY, PERM
110	1-237-981-11	s	RES, VAR, CARBON 20K
111	1-563-159-11	s	CONNECTOR, 5P FEMALE "INCOM-1/2"
112	1-571-070-11	s	SWITCH, TOGGLE
113	1-942-313-12	o	HARNESS (INCOM B)
114	1-942-314-11	o	HARNESS (CCU)
115	2-832-007-00	s	BUSHING (K), INSULATING
116	2-990-404-01	o	HEAT SINK (PH291-H-9-M)
117	3-465-047-00	s	SPRING, COMPRESSION
118	3-644-407-00	o	CLIP, AC WIRE E
119	3-657-627-11	s	KNOB (2)
120	3-660-428-00	s	SPRING, TENSION
121	3-672-267-00	s	NUT, CONTROL
122	3-683-631-01	o	CLAMP
123	3-703-074-00	s	CAP 3, SHAFT
124	3-703-207-11	s	INSULATOR, TO-220
125	3-733-047-01	o	PANEL (B) INCOM
126	3-733-049-01	o	SPACER, RV
127	3-733-050-01	o	BRACKET (LEFT), INCOM
128	3-733-051-01	o	BRACKET (RIGHT), INCOM
129	3-733-102-01	o	PLATE, ORNAMENTAL
130	3-733-146-01	o	SPRING, TENSION
131	3-733-150-01	o	BRACKET (RIGHT), PANEL
132	3-733-151-01	o	BRACKET (LEFT), PANEL
133	3-733-152-01	o	SHAFT (A), LEVER
134	3-733-153-01	o	HOLDER, RELEASE STAY
135	3-733-154-01	o	PLATE, SLIDE, LOCK
136	3-733-155-01	o	LEVER, LOCK
137	3-733-156-01	o	LEVER (RIGHT), LINK
138	3-733-157-01	o	LEVER (LEFT), LINK
139	3-733-158-01	o	SHAFT (RIGHT), LINK
140	3-733-159-01	o	SHAFT (LEFT), LINK
141	3-733-160-01	o	LEVER, RELEASE
142	3-733-161-01	o	SPRING
143	3-733-162-01	o	HOLDER, PC BOARD
144	3-733-164-01	o	STAY, RELEASE
145	3-733-165-01	o	STAY (RIGHT)
146	3-733-166-01	o	STAY (LEFT)
147	3-733-170-01	o	PANEL, REAR
148	3-733-171-02	o	PANEL, FRONT
149	3-733-173-02	o	CABINET
150	4-876-607-21	o	COLLAR (E), PLATE, JACK
151	9-911-839-99	s	RUBBER, FRONT CUSHION

RACK MOUNT BLOCK

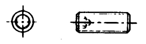
No.	Part No.	SP	Description
201	A-7405-089-B	o	MOUNTED PCB (LEFT), RACK
202	A-7405-103-B	o	MOUNTED PCB (RIGHT), RACK
203	A-8262-362-A	o	RACK MOUNT (F) ASSY
204	2-297-913-00	s	WASHER, (DIA.5), ORNAMENTAL
205	3-175-408-01	o	PANEL (A2), BLANK
206	3-697-707-01	o	CLAMP (A), HARNESS
207	3-703-074-00	s	CAP 3, SHAFT
208	3-703-075-00	s	CAP 2, SHAFT
209	3-733-107-01	s	SHAFT, CABLE CLAMP
210	3-733-108-01	o	SPRING
211	3-733-109-01	o	ROLLER (B)
212	3-733-110-01	o	SHAFT (B), ROLLER
213	3-733-111-01	o	BRACKET, STOPPER
214	3-733-112-01	s	PANEL (LEFT), BLANK
215	3-733-113-01	o	PANEL (RIGHT), BLANK
216	3-733-114-01	o	PANEL (B), BLANK
217	3-733-116-01	s	BRACKET (REAR), RACK MOUNT
218	3-733-117-01	o	RAIL, SLIDE
219	3-733-118-01	s	CLAMP, CABLE
220	3-733-119-01	o	BRACKET, RAIL

RACK MOUNT BLOCK


201
207
209
210
B4x5
217
220
B4x5
207
219
B4x5
206
204
208
212
211
B3x5
208
213
218
B4x5
B4x5
B4x5
218
217
B3x6
RK5x3
B3x6
205
214
203
208
204
220
212
213
B3x5
211
208
202
216
B3x6
B3x6
215
RK5x8
SONY

SCREWS

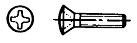
HEXAGON SET SCREW
(FLAT)
SNCM6-PD



7-621-□□□-□□

SIZE	Parts No.
2 x 2.5	731-08
2 x 3	732-08
2 x 4	733-08
2 x 5	–
2 x 6	–
2.6 x 3	737-08
2.6 x 4	738-08
2.6 x 5	739-08
2.6 x 6	740-08

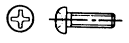
+RK
Bzn-N



7-682-□□□-□□

SIZE	Parts No.
3 x 4	345-09
x 5	346-09
x 6	347-09
x 8	348-09
x 10	349-09
x 12	350-09
x 14	351-09
x 16	352-09
x 20	353-09
4 x 6	360-09
x 8	361-09
x 10	362-09
x 12	363-09
x 14	364-09
x 16	365-09
x 20	366-09

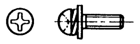
+B
Bzn-N



7-621-□□□-□□

SIZE	Parts No.
2 x 3	772-00
x 4	772-10
x 5	772-20
x 6	772-30
x 8	772-40
x 10	772-50
x 12	772-60
x 14	772-70
x 16	772-80
x 20	–
2.6 x 3	775-00
x 4	775-10
x 5	775-20
x 6	773-95
x 8	775-40
x 10	775-50
x 12	775-60
x 14	775-70
x 16	775-80
x 20	775-90

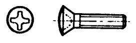
+PSW
Czn-N



7-682-□□□-□□

SIZE	Parts No.
3 x 6	947-01
x 8	948-01
x 10	949-01
x 12	950-01
x 14	951-01
x 16	952-01
x 20	953-01
x 25	954-01
x 30	955-01
x 35	956-01
x 40	957-01
4 x 8	961-01
x 10	962-01
x 12	963-01
x 14	964-01
x 16	965-01
x 20	966-01
x 25	967-01
x 30	968-01
x 35	969-01
x 40	970-01

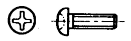
+RK
Cr-N



7-682-□□□-□□

SIZE	Parts No.
3 x 4	245-04
x 5	246-04
x 6	347-04
x 8	348-04
x 10	349-04
x 12	350-04
x 14	351-04
x 16	352-04
x 20	353-04
4 x 6	360-04
x 8	361-04
x 10	362-04
x 12	363-04
x 14	364-04
x 16	365-04
x 20	366-04
5 x 8	374-04
x 10	375-04
x 12	376-04
x 14	377-04
x 16	778-04
x 20	379-04

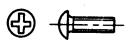
+B
Cr-N



7-682-□□□-□□

SIZE	Parts No.
3 x 3	544-04
x 4	545-04
x 5	546-04
x 6	547-04
x 8	548-04
x 10	549-04
x 12	550-04
x 14	551-04
x 16	552-04
x 20	553-04
4 x 4	558-04
x 5	559-04
x 6	560-04
x 8	561-04
x 10	562-04
x 12	563-04
x 14	564-04
x 16	565-04
x 20	566-04
5 x 8	574-04
x 10	575-04
x 12	576-04
x 14	577-04
x 16	578-04
x 20	579-04

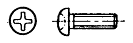
+BVTT
CZn-N



7-685-□□□-□□

SIZE	Parts No.
2 x 3	850-01
x 4	851-01
x 5	852-01
x 6	853-01
x 8	854-01
x 10	855-01
x 12	856-01
2.6 x 4	860-01
x 5	861-01
x 6	862-01
x 8	863-01
x 10	864-01
x 12	865-01
x 14	866-01
x 16	867-01
x 20	868-01
3 x 5	870-01
x 6	871-01
x 8	872-01
x 10	873-01
x 12	874-01
x 14	875-01
x 16	876-01
x 20	877-01
x 25	878-01
x 30	879-01

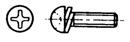
+B
Bzn-N



7-682-□□□-□□

SIZE	Parts No.
3 x 3	544-09
x 4	545-09
x 5	546-09
x 6	547-09
x 8	548-09
x 10	549-09
x 12	550-09
x 14	551-09
x 16	552-09
x 20	553-09
x 30	555-09
4 x 4	558-09
x 5	559-09
x 6	560-09
x 8	561-09
x 10	562-09
x 12	563-09
x 14	564-09
x 16	565-09
x 20	566-09
5 x 8	574-09
x 10	575-09
x 12	576-09
x 14	577-09
x 16	578-09
x 20	579-09

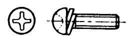
+PS
Czn-N



7-682-□□□-□□

SIZE	Parts No.
2 x 4	253-05
x 5	253-15
x 6	253-25
x 8	253-35
x 10	253-45
x 12	253-55
2.6 x 4	253-95
x 5	254-05
x 6	254-15
x 8	254-25
x 10	254-35
x 12	254-45
x 14	254-95
x 16	254-55
x 20	254-65
3 x 5	646-01
x 6	647-01
x 8	648-01
x 10	649-01
x 12	650-01
x 14	651-01
x 16	652-01
x 20	653-01
4 x 6	660-01
x 8	661-01
x 10	662-01
x 12	663-01
x 14	664-01
x 16	665-01
x 20	666-01

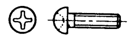
+PS
Bzn-N



7-682-□□□-□□

SIZE	Parts No.
2 x 4	253-00
x 5	253-10
x 6	253-20
x 8	253-30
x 10	253-40
x 12	253-50
2.6 x 4	253-90
x 5	254-00
x 6	254-10
x 8	254-20
x 10	254-30
x 12	254-40
x 14	254-90
x 16	254-50
x 20	254-60
3 x 5	646-09
x 6	647-09
x 8	648-09
x 10	649-09
x 12	650-09
x 14	651-09
x 16	652-09
x 20	–
4 x 6	–
x 8	–
x 10	–
x 12	–
x 14	–
x 16	–
x 20	–

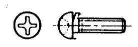
PRECISION +P
Cr-N



7-627-□□□-□□

SIZE	Parts No.
1.7 x 1.6	–
x 1.8	–
x 2	552-27
x 2.2	552-87
x 2.5	552-07
x 2.8	–
x 3	552-37
x 3.5	–
x 4	552-47
x 4.5	552-67
x 5	552-57
x 5.5	557-07
x 6	552-77
2 x 1.8	554-37
x 2	553-17
x 2.2	554-07
x 2.5	553-27
x 2.8	–
x 3	553-37
x 3.5	554-17
x 4	553-47
x 4.5	553-57
x 5	553-67
x 5.5	–
x 6	554-27
x 7	553-87
x 8	553-97
x 10	553-77
2.6 x 2.8	556-07
x 3	–
x 3.5	–
x 4	556-37
x 4.5	–
x 5	556-57
x 5.5	–
x 6	556-77
x 7	–
x 8	556-97
x 9	–
x 10	557-47

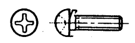
PRECISION +P
Bzn-N



7-627-□□□-□□

SIZE	Parts No.
1.7 x 1.6	552-18
x 1.8	–
x 2	552-28
x 2.2	–
x 2.5	552-08
x 2.8	–
x 3	552-38
x 3.5	552-78
x 4	552-48
x 4.5	–
x 5	552-58
x 5.5	–
x 6	–
2 x 1.8	554-38
x 2	553-18
x 2.2	–
x 2.5	553-28
x 2.8	554-58
x 3	553-38
x 3.5	554-18
x 4	553-48
x 4.5	553-58
x 5	554-28
x 5.5	–
x 6	553-68
x 7	553-88
x 8	553-98
x 10	553-78
2.6 x 2.8	556-08
x 3	–
x 3.5	556-28
x 4	556-38
x 4.5	556-48
x 5	556-58
x 5.5	–
x 6	556-78
x 7	–
x 8	–
x 9	–
x 10	–

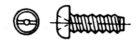
PRECISION +P
Bzn-N



7-627-□□□-□□

SIZE	Parts No.
1.7 x 1.6	552-18
x 1.8	–
x 2	552-28
x 2.2	–
x 2.5	552-08
x 2.8	–
x 3	552-38
x 3.5	552-78
x 4	552-48
x 4.5	–
x 5	552-58
x 5.5	–
x 6	–
2 x 1.8	554-38
x 2	553-18
x 2.2	–
x 2.5	553-28
x 2.8	554-58
x 3	553-38
x 3.5	554-18
x 4	553-48
x 4.5	553-58
x 5	554-28
x 5.5	–
x 6	553-68
x 7	553-88
x 8	553-98
x 10	553-78
2.6 x 2.8	556-08
x 3	–
x 3.5	556-28
x 4	556-38
x 4.5	556-48
x 5	556-58
x 5.5	–
x 6	556-78
x 7	–
x 8	–
x 9	–
x 10	–

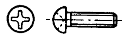
TOTSU P
BZn-N NON SLIT



7-685-□□□-□□

SIZE	Parts No.
2 x 4	102-19
2 x 5	103-19
2 x 6	104-19
2 x 8	105-19
2 x 10	106-19
2 x 12	107-19
2.6 x 4	131-19
2.6 x 5	132-19
2.6 x 6	133-19
2.6 x 8	134-19
2.6 x 10	135-19
2.6 x 12	136-19
2.6 x 14	137-19
2.6 x 16	138-19
3 x 5	144-19
3 x 6	145-19
3 x 8	146-19
3 x 10	147-19
3 x 12	148-19
3 x 14	149-19
3 x 16	150-19
3 x 18	
3 x 20	151-19
3 x 25	152-19
3 x 30	153-19
3 x 35	154-19
3 x 40	155-19
3 x 58	
4 x 6	158-19
4 x 8	159-19
4 x 10	160-19
4 x 12	161-19
4 x 14	162-19
4 x 16	163-19
4 x 20	164-19
4 x 25	165-19
4 x 30	166-19
4 x 35	167-19

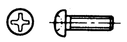
+P
Czn-N



7-682-□□□-□□

SIZE	Parts No.
3 x 3	144-01
x 4	145-01
x 5	146-01
x 6	147-01
x 8	148-01
x 10	149-01
x 12	150-01
x 14	151-01
x 16	152-01
4 x 4	158-01
x 5	159-01
x 6	160-01
x 8	161-01
x 10	162-01
x 12	163-01
x 14	164-01
x 16	165-01
x 20	166-01
x 25	167-01
x 30	168-01
x 35	169-01
x 40	170-01
x 45	171-01
x 50	172-01
5 x 8	174-01
x 10	175-01
x 12	176-01
x 14	177-01
x 16	178-01
x 20	179-01
x 25	180-01
x 30	181-01
x 35	182-01
x 40	183-01
x 45	184-01
x 50	185-01
6 x 8	186-01
x 10	187-01
x 12	188-01
x 14	189-01
x 16	190-01
x 20	191-01
x 25	192-01
x 30	193-01
x 35	194-01
x 40	195-01
x 45	196-01
x 50	197-01

+B
Cr-N



7-621-□□□-□□

SIZE	Parts No.
2 x 3	772-08
x 4	772-18
x 5	771-06
x 6	772-38
x 8	772-48
x 10	772-58
x 12	772-68
x 14	772-78
x 16	772-88
x 20	–
2.6 x 3	775-08
x 4	773-86
x 5	770-87
x 6	770-67
x 8	770-99
x 10	773-87
x 12	775-68
x 14	775-78
x 16	775-88
x 20	773-91

ELECTRICAL PARTS

RESISTOR, CHIP

Part No.	SP	Description
1-216-295-00	s	RES, CHIP 0 5% 1/10W
1-216-298-00	s	RES, CHIP 2.2 5% 1/10W
1-216-302-00	s	RES, CHIP 2.7 5% 1/10W
1-216-304-11	s	RES, CHIP 3.3 5% 1/10W
1-216-306-11	s	RES, CHIP 3.9 5% 1/10W
1-216-308-00	s	RES, CHIP 4.7 5% 1/10W
1-216-309-00	s	RES, CHIP 5.6 5% 1/10W
1-216-311-00	s	RES, CHIP 6.8 5% 1/10W
1-216-313-00	s	RES, CHIP 8.2 5% 1/10W
1-216-001-00	s	RES, CHIP 10 5% 1/10W
1-216-003-11	s	RES, CHIP 12 5% 1/10W
1-216-005-00	s	RES, CHIP 15 5% 1/10W
1-216-007-00	s	RES, CHIP 18 5% 1/10W
1-216-009-00	s	RES, CHIP 22 5% 1/10W
1-216-011-00	s	RES, CHIP 27 5% 1/10W
1-216-013-00	s	RES, CHIP 33 5% 1/10W
1-216-015-00	s	RES, CHIP 39 5% 1/10W
1-216-017-00	s	RES, CHIP 47 5% 1/10W
1-216-019-00	s	RES, CHIP 56 5% 1/10W
1-216-021-00	s	RES, CHIP 68 5% 1/10W
1-216-023-00	s	RES, CHIP 82 5% 1/10W
1-216-025-00	s	RES, CHIP 100 5% 1/10W
1-216-027-00	s	RES, CHIP 120 5% 1/10W
1-216-029-00	s	RES, CHIP 150 5% 1/10W
1-216-031-00	s	RES, CHIP 180 5% 1/10W
1-216-033-00	s	RES, CHIP 220 5% 1/10W
1-216-035-00	s	RES, CHIP 270 5% 1/10W
1-216-037-00	s	RES, CHIP 330 5% 1/10W
1-216-039-00	s	RES, CHIP 390 5% 1/10W
1-216-041-00	s	RES, CHIP 470 5% 1/10W
1-216-043-00	s	RES, CHIP 560 5% 1/10W
1-216-045-00	s	RES, CHIP 680 5% 1/10W
1-216-047-00	s	RES, CHIP 820 5% 1/10W
1-216-049-00	s	RES, CHIP 1k 5% 1/10W
1-216-051-00	s	RES, CHIP 1.2k 5% 1/10W
1-216-053-00	s	RES, CHIP 1.5k 5% 1/10W
1-216-055-00	s	RES, CHIP 1.8k 5% 1/10W
1-216-057-00	s	RES, CHIP 2.2k 5% 1/10W
1-216-059-00	s	RES, CHIP 2.7k 5% 1/10W
1-216-061-00	s	RES, CHIP 3.3k 5% 1/10W
1-216-063-00	s	RES, CHIP 3.9k 5% 1/10W
1-216-065-00	s	RES, CHIP 4.7k 5% 1/10W
1-216-067-00	s	RES, CHIP 5.6k 5% 1/10W
1-216-069-00	s	RES, CHIP 6.8k 5% 1/10W
1-216-071-00	s	RES, CHIP 8.2k 5% 1/10W
1-216-073-00	s	RES, CHIP 10k 5% 1/10W
1-216-075-00	s	RES, CHIP 12k 5% 1/10W
1-216-077-00	s	RES, CHIP 15k 5% 1/10W
1-216-079-00	s	RES, CHIP 18k 5% 1/10W
1-216-081-00	s	RES, CHIP 22k 5% 1/10W
1-216-083-00	s	RES, CHIP 27k 5% 1/10W
1-216-085-00	s	RES, CHIP 33k 5% 1/10W
1-216-748-11	s	RES, CHIP 39k 5% 1/10W
1-216-089-00	s	RES, CHIP 47k 5% 1/10W
1-216-091-00	s	RES, CHIP 56k 5% 1/10W

RESISTOR, CHIP

Part No.	SP	Description
1-216-093-00	s	RES, CHIP 68k 5% 1/10W
1-216-095-00	s	RES, CHIP 82k 5% 1/10W
1-216-097-00	s	RES, CHIP 100k 5% 1/10W
1-216-099-00	s	RES, CHIP 120k 5% 1/10W
1-216-101-00	s	RES, CHIP 150k 5% 1/10W
1-216-103-00	s	RES, CHIP 180k 5% 1/10W
1-216-105-00	s	RES, CHIP 220k 5% 1/10W
1-216-107-00	s	RES, CHIP 270k 5% 1/10W
1-216-109-00	s	RES, CHIP 330k 5% 1/10W
1-216-111-00	s	RES, CHIP 390k 5% 1/10W
1-216-113-00	s	RES, CHIP 470k 5% 1/10W
1-216-115-00	s	RES, CHIP 560k 5% 1/10W
1-216-117-00	s	RES, CHIP 680k 5% 1/10W
1-216-119-00	s	RES, CHIP 820k 5% 1/10W
1-216-121-00	s	RES, CHIP 1.0M 5% 1/10W
1-216-123-11	s	RES, CHIP 1.2M 5% 1/10W
1-216-125-00	s	RES, CHIP 1.5M 5% 1/10W
1-216-127-11	s	RES, CHIP 1.8M 5% 1/10W
1-216-129-00	s	RES, CHIP 2.2M 5% 1/10W
1-216-131-11	s	RES, CHIP 2.7M 5% 1/10W
1-216-133-00	s	RES, CHIP 3.3M 5% 1/10W

CAPACITOR, CHIP CERAMIC

Part No.	SP	Description
1-163-083-00	s	CAP, CHIP CERAMIC 1pF +-0.25pF 50V
1-163-085-00	s	CAP, CHIP CERAMIC 2pF +-0.25pF 50V
1-163-087-00	s	CAP, CHIP CERAMIC 4pF +-0.25pF 50V
1-163-089-00	s	CAP, CHIP CERAMIC 6pF +-0.5pF 50V
1-163-091-00	s	CAP, CHIP CERAMIC 8pF +-0.5pF 50V
1-163-093-00	s	CAP, CHIP CERAMIC 10pF 5% 50V
1-163-097-00	s	CAP, CHIP CERAMIC 15pF 5% 50V
1-163-101-00	s	CAP, CHIP CERAMIC 22pF 5% 50V
1-163-105-00	s	CAP, CHIP CERAMIC 33pF 5% 50V
1-163-109-00	s	CAP, CHIP CERAMIC 47pF 5% 50V
1-163-113-00	s	CAP, CHIP CERAMIC 68pF 5% 50V
1-163-117-00	s	CAP, CHIP CERAMIC 100pF 5% 50V
1-163-121-00	s	CAP, CHIP CERAMIC 150pF 5% 50V
1-163-125-00	s	CAP, CHIP CERAMIC 220pF 5% 50V
1-163-129-00	s	CAP, CHIP CERAMIC 330pF 5% 50V
1-163-133-00	s	CAP, CHIP CERAMIC 470pF 5% 50V
1-163-137-00	s	CAP, CHIP CERAMIC 680pF 5% 50V
1-163-141-00	s	CAP, CHIP CERAMIC 1000pF 5% 50V
1-163-145-00	s	CAP, CHIP CERAMIC 1500pF 10% 50V
1-164-161-11	s	CAP, CHIP CERAMIC 2200pF 10% 100V
1-164-182-11	s	CAP, CHIP CERAMIC 3300pF 10% 100V
1-163-017-00	s	CAP, CHIP CERAMIC 4700pF 10% 50V
1-163-019-00	s	CAP, CHIP CERAMIC 6800pF 10% 50V
1-164-232-11	s	CAP, CHIP CERAMIC 0.01 20% 100V
1-163-023-00	s	CAP, CHIP CERAMIC 0.015 10% 50V
1-163-034-00	s	CAP, CHIP CERAMIC 0.033 50V
1-163-035-00	s	CAP, CHIP CERAMIC 0.047 50V
1-163-036-00	s	CAP, CHIP CERAMIC 0.068 50V
1-163-038-00	s	CAP, CHIP CERAMIC 0.1 50V

CP-130 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8271-193-A	o	MOUNTED CIRCUIT BOARD, CP-130 (B)
4pcs	2-990-404-01	o	HEAT SINK (PH291-H-9-M)
4pcs	7-621-773-87	s	SCREW +B 2.6X10
4pcs	7-622-207-05	s	NUT 2.6, TYPE 2
4pcs	2-832-007-00	s	BUSHING (K), INSULATING
4pcs	3-703-207-11	s	INSULATOR, TO-220
4pcs	7-623-953-31	s	WASHER 2.6, FIBER
4pcs	3-644-407-00	o	CLIP, AC WIRE E
8pcs	3-683-631-01	o	CLAMP
4pcs	7-623-207-22	s	SW 2.6, TYPE 2
BZ1	1-529-037-11	s	BUZZER
C1	1-124-120-11	s	ELECT 220uF 20% 25V
C4	1-131-349-00	s	TANTALUM 2.2uF 10% 35V
C5	1-131-349-00	s	TANTALUM 2.2uF 10% 35V
C7	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C8	1-135-076-21	s	TANTALUM, CHIP 1uF 10% 35V
C9	1-135-076-21	s	TANTALUM, CHIP 1uF 10% 35V
C10	1-124-120-11	s	ELECT 220uF 20% 25V
C16	1-163-251-11	s	CERAMIC 100PF 5% 50V
C18	1-124-589-11	s	ELECT 47uF 20% 16V
C19	1-126-096-11	s	ELECT 10uF 20% 35V
C20	1-124-478-11	s	ELECT 100uF 20% 25V
C21	1-124-120-11	s	ELECT 220uF 20% 25V
C24	1-131-349-00	s	TANTALUM 2.2uF 10% 35V
C25	1-131-349-00	s	TANTALUM 2.2uF 10% 35V
C26	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C27	1-135-076-21	s	TANTALUM, CHIP 1uF 10% 35V
C28	1-135-076-21	s	TANTALUM, CHIP 1uF 10% 35V
C30	1-124-120-11	s	ELECT 220uF 20% 25V
C36	1-163-251-11	s	CERAMIC 100PF 5% 50V
C38	1-124-589-11	s	ELECT 47uF 20% 16V
C39	1-126-096-11	s	ELECT 10uF 20% 35V
C40	1-124-478-11	s	ELECT 100uF 20% 25V
C41	1-130-776-00	s	FILM 0.47uF 5% 63V
C42	1-124-510-11	s	ELECT 220uF 20% 25V
C43	1-124-510-11	s	ELECT 220uF 20% 25V
C44	1-124-510-11	s	ELECT 220uF 20% 25V
C45	1-130-776-00	s	FILM 0.47uF 5% 63V
C46	1-130-776-00	s	FILM 0.47uF 5% 63V
C47	1-127-518-11	s	ELECT (SOLID) 100uF 20% 16V
C48	1-130-776-00	s	FILM 0.47uF 5% 63V
C49	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C50	1-131-347-00	s	TANTALUM 1uF 10% 35V
C53	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C55	1-131-368-00	s	TANTALUM 3.3uF 10% 16V
C56	1-131-368-00	s	TANTALUM 3.3uF 10% 16V
C61	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C62	1-131-368-00	s	TANTALUM 3.3uF 10% 16V
C65	1-131-377-00	s	TANTALUM 10uF 10% 10V
C66	1-131-377-00	s	TANTALUM 10uF 10% 10V
C67	1-127-518-11	s	ELECT (SOLID) 100uF 20% 16V
C69	1-130-776-00	s	FILM 0.47uF 5% 63V
C71	1-126-516-11	s	ELECT 120MF 20% 16V
C72	1-130-776-00	s	FILM 0.47uF 5% 63V
C73	1-126-516-11	s	ELECT 120MF 20% 16V
C74	1-130-776-00	s	FILM 0.47uF 5% 63V
C76	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C77	1-127-518-11	s	ELECT (SOLID) 100uF 20% 16V

(CP-130 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C79	1-130-776-00	s	FILM 0.47uF 5% 63V
C80	1-127-518-11	s	ELECT (SOLID) 100uF 20% 16V
C81	1-130-776-00	s	FILM 0.47uF 5% 63V
C83	1-131-377-00	s	TANTALUM 10uF 10% 10V
C84	1-127-516-11	s	ALUMN SOLID 220uF 20% 10V
C87	1-131-377-00	s	TANTALUM 10uF 10% 10V
C88	1-124-120-11	s	ELECT 220uF 20% 25V
C90	1-130-776-00	s	FILM 0.47uF 5% 63V
C91	1-127-520-11	s	ELECT(SOLID) 68uF 20% 20V
C92	1-130-776-00	s	FILM 0.47uF 5% 63V
C93	1-127-520-11	s	ELECT(SOLID) 68uF 20% 20V
C97	1-135-164-21	s	TANTAL 22uF 20% 10V
C101	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C103	1-124-589-11	s	ELECT 47uF 20% 16V
C106	1-163-251-11	s	CERAMIC 100PF 5% 50V
C107	1-124-589-11	s	ELECT 47uF 20% 16V
C110	1-163-251-11	s	CERAMIC 100PF 5% 50V
C111	1-124-589-11	s	ELECT 47uF 20% 16V
C115	1-163-251-11	s	CERAMIC 100PF 5% 50V
C116	1-124-589-11	s	ELECT 47uF 20% 16V
C118	1-163-251-11	s	CERAMIC 100PF 5% 50V
C119	1-124-589-11	s	ELECT 47uF 20% 16V
C121	1-163-251-11	s	CERAMIC 100PF 5% 50V
C122	1-124-589-11	s	ELECT 47uF 20% 16V
C125	1-124-120-11	s	ELECT 220uF 20% 25V
C126	1-124-120-11	s	ELECT 220uF 20% 25V
C127	1-124-120-11	s	ELECT 220uF 20% 25V
C128	1-124-120-11	s	ELECT 220uF 20% 25V
C130	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C131	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C132	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C133	1-135-164-21	s	TANTAL 22uF 20% 10V
C134	1-135-164-21	s	TANTAL 22uF 20% 10V
C135	1-135-164-21	s	TANTAL 22uF 20% 10V
C146	1-135-164-21	s	TANTAL 22uF 20% 10V
C174	1-135-164-21	s	TANTAL 22uF 20% 10V
C175	1-135-164-21	s	TANTAL 22uF 20% 10V
C176	1-163-251-11	s	CERAMIC 100PF 5% 50V
C177	1-135-164-21	s	TANTAL 22uF 20% 10V
C185	1-163-251-11	s	CERAMIC 100PF 5% 50V
C186	1-163-251-11	s	CERAMIC 100PF 5% 50V
C187	1-163-251-11	s	CERAMIC 100PF 5% 50V
C188	1-163-251-11	s	CERAMIC 100PF 5% 50V
C189	1-163-251-11	s	CERAMIC 100PF 5% 50V
C191	1-163-235-11	s	CERAMIC 22PF 5% 50V
CN3	1-506-641-11	o	CONNECTOR, 24P MALE
CN4	1-506-634-11	o	CONNECTOR, PS 10P, MALE
CN5	1-506-633-11	o	CONNECTOR, 8P MALE
CN6	1-506-632-11	o	CONNECTOR, PS 6P, MALE
CN7	1-506-637-11	o	CONNECTOR, PS 16P, MALE
CN8	1-506-631-11	o	CONNECTOR, PS 4P, MALE
CN9	1-506-631-11	o	CONNECTOR, PS 4P, MALE
CNI1	1-526-662-21	s	SOCKET, IC 40P
CNI2	1-526-662-21	s	SOCKET, IC 40P
CNI3	1-540-024-12	o	SOCKET, IC
CNI4	1-540-024-12	o	SOCKET, IC
CP1	1-567-990-11	s	OSCILLATOR, CRYSTAL 12MHz

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(CP-130 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
D1	8-719-911-19	s	DIODE 1SS119
D2	8-719-911-19	s	DIODE 1SS119
D3	8-719-911-19	s	DIODE 1SS119
D4	8-719-911-19	s	DIODE 1SS119
D5	8-719-911-55	s	DIODE U05G
D6	8-719-911-19	s	DIODE 1SS119
D7	8-719-982-04	s	DIODE ERB81-004
D8	8-719-911-19	s	DIODE 1SS119
D9	8-719-911-19	s	DIODE 1SS119
D10	8-719-911-19	s	DIODE 1SS119
D11	8-719-911-19	s	DIODE 1SS119
D12	8-719-981-00	s	DIODE ERC81-004
D13	8-719-911-19	s	DIODE 1SS119
D14	8-719-981-00	s	DIODE ERC81-004
D15	8-719-911-19	s	DIODE 1SS119
D16	8-719-911-19	s	DIODE 1SS119
D17	8-719-911-19	s	DIODE 1SS119
D18	8-719-982-04	s	DIODE ERB81-004
D19	8-719-911-19	s	DIODE 1SS119
FB1	1-543-602-11	s	BEAD, FERRITE
FB2	1-543-602-11	s	BEAD, FERRITE
FB3	1-543-602-11	s	BEAD, FERRITE
FB4	1-543-602-11	s	BEAD, FERRITE
IC1	8-759-981-92	s	IC RC4558M
IC2	8-759-142-19	s	IC UPC4064G
IC3	8-759-702-01	s	IC NJM386BS
IC4	8-759-981-92	s	IC RC4558M
IC5	8-759-142-19	s	IC UPC4064G
IC6	8-759-702-01	s	IC NJM386BS
IC7	8-759-905-80	s	IC AD580MH
IC8	8-759-937-36	s	IC TL1451ACNS
IC9	8-759-937-36	s	IC TL1451ACNS
IC10	8-759-142-19	s	IC UPC4064G
IC11	8-759-203-93	s	IC TC40H393F
IC13	8-759-240-50	s	IC TC4050BP
IC14	8-759-201-53	s	IC TC40H000F
IC15	8-759-201-61	s	IC TC40H004F
IC16	8-759-204-51	s	IC TC40H008F
IC17	8-759-142-20	s	IC UPC4062G2
IC18	8-759-133-90	s	IC UPC339C
IC19	8-759-201-64	s	IC TC40H074F
IC20	8-759-201-61	s	IC TC40H004F
IC21	8-759-133-90	s	IC UPC339C
IC22	8-759-201-64	s	IC TC40H074F
IC23	8-759-201-61	s	IC TC40H004F
IC24	8-759-133-90	s	IC UPC339C
IC25	8-759-201-64	s	IC TC40H074F
IC26	8-759-239-67	s	IC TC74HC697AP
IC27	8-759-239-67	s	IC TC74HC697AP
IC28	8-759-239-67	s	IC TC74HC697AP
IC29	8-759-239-67	s	IC TC74HC697AP
IC30	8-759-239-67	s	IC TC74HC697AP
IC31	8-759-239-67	s	IC TC74HC697AP
IC32	8-759-201-61	s	IC TC40H004F
IC33	8-759-201-61	s	IC TC40H004F
IC34	8-759-239-67	s	IC TC74HC697AP
IC35	8-759-239-67	s	IC TC74HC697AP
IC36	8-759-239-67	s	IC TC74HC697AP

(CP-130 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
IC37	8-759-239-67	s	IC TC74HC697AP
IC38	8-759-239-67	s	IC TC74HC697AP
IC39	8-759-239-67	s	IC TC74HC697AP
IC40	8-759-925-90	s	IC SN74HC74ANS
IC41	8-759-908-35	s	IC TL7705CP
IC42	8-759-916-71	s	IC SN74HC244N
IC43	8-759-234-54	s	IC TMPZ84C015AF-6
IC44	8-759-926-11	s	IC SN74HC138ANS
IC45	8-759-926-11	s	IC SN74HC138ANS
IC46	8-759-063-17	s	IC 27C256A-CANL-V1.0, EPROM
IC47	8-752-328-19	s	IC CXK5864BM-12L
IC48	8-752-328-19	s	IC CXK5864BM-12L
IC49	8-759-230-85	s	IC TMPZ84C10AF
IC50	8-759-973-63	s	IC MB89352-PFQ
IC51	8-759-234-54	s	IC TMPZ84C015AF-6
IC52	8-759-926-11	s	IC SN74HC138ANS
IC53	8-759-926-11	s	IC SN74HC138ANS
IC54	8-759-926-11	s	IC SN74HC138ANS
IC55	8-759-926-11	s	IC SN74HC138ANS
IC56	8-759-927-46	s	IC SN74HC00ANS
IC57	8-759-925-72	s	IC SN74HC02ANS
IC58	8-759-063-14	s	IC 27C256A-CDSP-V1.0, EPROM
IC59	8-759-970-04	s	IC MB8421-90LP
IC60	8-752-328-19	s	IC CXK5864BM-12L
IC61	8-752-328-19	s	IC CXK5864BM-12L
IC62	8-759-908-35	s	IC TL7705CP
IC63	8-759-004-97	s	IC MC14490P
IC64	8-759-004-97	s	IC MC14490P
IC65	8-759-925-74	s	IC SN74HC04ANS
IC66	8-759-916-71	s	IC SN74HC244N
IC67	8-759-926-67	s	IC SN74HC374ANS
IC68	8-759-926-67	s	IC SN74HC374ANS
IC69	8-759-926-67	s	IC SN74HC374ANS
IC70	8-759-926-67	s	IC SN74HC374ANS
IC71	8-759-925-74	s	IC SN74HC04ANS
IC73	8-759-142-25	s	IC UPD72030G
IC74	8-759-925-90	s	IC SN74HC74ANS
IC75	8-759-239-23	s	IC SN74HC86NS
IC76	8-759-230-85	s	IC TMPZ84C10AF
IC77	8-752-337-80	s	IC CXK58257AM-12L
IC78	8-752-337-80	s	IC CXK58257AM-12L
IC79	8-752-337-80	s	IC CXK58257AM-12L
IC80	8-759-921-34	s	IC SN74HC245AN
IC81	8-759-921-34	s	IC SN74HC245AN
IC82	8-759-925-74	s	IC SN74HC04ANS
IC83	8-759-925-85	s	IC SN74HC32ANS
IC84	8-759-974-07	s	IC SN7407N
IC85	8-759-927-46	s	IC SN74HC00ANS
IC86	8-759-925-85	s	IC SN74HC32ANS
IC87	8-759-926-23	s	IC SN74HC163ANS
IC88	8-759-926-23	s	IC SN74HC163ANS
IC89	8-759-926-23	s	IC SN74HC163ANS
IC90	8-759-926-11	s	IC SN74HC138ANS
IC91	8-759-926-26	s	IC SN74HC166ANS
IC92	8-759-926-29	s	IC SN74HC175ANS
IC93	8-759-916-71	s	IC SN74HC244N
IC94	8-759-925-74	s	IC SN74HC04ANS
IC95	8-759-926-23	s	IC SN74HC163ANS
IC96	8-759-926-23	s	IC SN74HC163ANS

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(CP-130 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
IC97	8-759-926-11	s	IC SN74HC138ANS
IC99	8-759-927-46	s	IC SN74HC00ANS
IC100	8-759-323-06	s	IC HM63021RP-34
IC102	8-759-201-64	s	IC TC40H074F
IC103	8-759-239-47	s	IC TC74HC123AP
IC104	8-759-201-64	s	IC TC40H074F
IC105	8-759-925-90	s	IC SN74HC74ANS
IC106	8-759-303-20	s	IC HD46508PA
IC107	8-759-142-19	s	IC UPC4064G
IC108	8-759-142-19	s	IC UPC4064G
IC201	8-759-916-71	s	IC SN74HC244N
IC202	8-759-925-72	s	IC SN74HC02ANS
L2	1-408-416-00	s	INDUCTOR 39uH
L4	1-408-416-00	s	INDUCTOR 39uH
L5	1-410-283-11	s	48uH (WITH CORE)
L6	1-412-048-11	s	CHOKE 65uH
L7	1-412-048-11	s	CHOKE 65uH
L8	1-410-283-11	s	48uH (WITH CORE)
L9	1-412-048-11	s	CHOKE 65uH
L10	1-412-049-11	s	CHOKE 200uH
L11	1-410-284-11	s	10uH (WITH CORE)
Q1	8-729-109-44	s	TRANSISTOR 2SK94
Q2	8-729-230-31	s	TRANSISTOR 2SC3074LB
Q3	8-729-109-44	s	TRANSISTOR 2SK94
Q4	8-729-230-31	s	TRANSISTOR 2SC3074LB
Q5	8-729-266-83	s	TRANSISTOR 2SC2668
Q6	8-729-266-83	s	TRANSISTOR 2SC2668
Q7	8-729-110-53	s	TRANSISTOR 2SA1005
Q8	8-729-304-35	s	TRANSISTOR 2SJ122
Q9	8-729-230-32	s	TRANSISTOR 2SA1244LB
Q10	8-729-178-55	s	TRANSISTOR 2SC2785-E
Q11	8-729-266-83	s	TRANSISTOR 2SC2668
Q12	8-729-266-83	s	TRANSISTOR 2SC2668
Q13	8-729-110-53	s	TRANSISTOR 2SA1005
Q14	8-729-304-35	s	TRANSISTOR 2SJ122
Q15	8-729-230-31	s	TRANSISTOR 2SC3074LB
Q16	8-729-119-76	s	TRANSISTOR 2SA1115P
Q17	8-729-266-83	s	TRANSISTOR 2SC2668
Q18	8-729-266-83	s	TRANSISTOR 2SC2668
Q19	8-729-110-53	s	TRANSISTOR 2SA1005
Q20	8-729-304-35	s	TRANSISTOR 2SJ122
Q21	8-729-230-32	s	TRANSISTOR 2SA1244LB
Q22	8-729-178-55	s	TRANSISTOR 2SC2785-E
Q23	8-729-230-32	s	TRANSISTOR 2SA1244LB
Q24	8-729-178-55	s	TRANSISTOR 2SC2785-E
Q25	8-729-266-83	s	TRANSISTOR 2SC2668
Q26	8-729-266-83	s	TRANSISTOR 2SC2668
Q27	8-729-110-53	s	TRANSISTOR 2SA1005
Q28	8-729-304-35	s	TRANSISTOR 2SJ122
Q29	8-729-178-55	s	TRANSISTOR 2SC2785-E
R2	1-216-648-11	s	METAL, CHIP 750 0.5% 1/10W
R3	1-216-270-00	s	METAL 1M 5% 1/8W
R5	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R9	1-216-611-11	s	METAL, CHIP 22 0.5% 1/10W
R19	1-216-611-11	s	METAL, CHIP 22 0.5% 1/10W
R21	1-216-611-11	s	METAL, CHIP 22 0.5% 1/10W
R31	1-216-648-11	s	METAL, CHIP 750 0.5% 1/10W
R32	1-216-270-00	s	METAL 1M 5% 1/8W

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(CP-130 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R34	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R62	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R63	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R64	1-216-668-11	s	METAL, CHIP 5.1K 0.5% 1/10W
R65	1-216-690-11	s	METAL, CHIP 43K 0.5% 1/10W
R66	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R67	1-216-653-11	s	METAL, CHIP 1.2K 0.5% 1/10W
R77	1-216-668-11	s	METAL, CHIP 5.1K 0.5% 1/10W
R78	1-216-684-11	s	METAL, CHIP 24K 0.5% 1/10W
R79	1-216-687-11	s	METAL, CHIP 33K 0.5% 1/10W
R80	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R92	1-216-678-11	s	METAL, CHIP 13K 0.5% 1/10W
R93	1-216-668-11	s	METAL, CHIP 5.1K 0.5% 1/10W
R106	1-216-659-11	s	METAL, CHIP 2.2K 0.5% 1/10W
R107	1-216-659-11	s	METAL, CHIP 2.2K 0.5% 1/10W
R118	1-216-659-11	s	METAL, CHIP 2.2K 0.5% 1/10W
R119	1-216-659-11	s	METAL, CHIP 2.2K 0.5% 1/10W
R126	1-216-676-11	s	METAL, CHIP 11K 0.5% 1/10W
R127	1-216-659-11	s	METAL, CHIP 2.2K 0.5% 1/10W
R144	1-216-683-11	s	METAL, CHIP 22K 0.5% 1/10W
R145	1-216-663-11	s	METAL, CHIP 3.3K 0.5% 1/10W
R151	1-216-087-11	s	METAL 39K 5% 1/10W
R152	1-216-087-11	s	METAL 39K 5% 1/10W
R160	1-216-087-11	s	METAL 39K 5% 1/10W
R161	1-216-087-11	s	METAL 39K 5% 1/10W
R169	1-216-087-11	s	METAL 39K 5% 1/10W
R170	1-216-087-11	s	METAL 39K 5% 1/10W
R178	1-216-087-11	s	METAL 39K 5% 1/10W
R179	1-216-087-11	s	METAL 39K 5% 1/10W
R187	1-216-087-11	s	METAL 39K 5% 1/10W
R188	1-216-087-11	s	METAL 39K 5% 1/10W
R196	1-216-087-11	s	METAL 39K 5% 1/10W
R197	1-216-087-11	s	METAL 39K 5% 1/10W
R260	1-216-662-11	s	METAL, CHIP 3K 0.5% 1/10W
R261	1-216-660-11	s	METAL, CHIP 2.4K 0.5% 1/10W
R303	1-216-687-11	s	METAL, CHIP 33K 0.5% 1/10W
R305	1-216-698-11	s	METAL, CHIP 91K 0.5% 1/10W
RB1	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB2	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB3	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB4	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB5	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB6	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB7	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB8	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB9	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB10	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB11	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB12	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB13	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB14	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB15	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB20	1-231-545-00	s	BLOCK, RESISTOR 33KX4
RB21	1-231-545-00	s	BLOCK, RESISTOR 33KX4
RB22	1-231-400-00	s	RESISTOR BLOCK 390x8
RB23	1-231-400-00	s	RESISTOR BLOCK 390x8
RB24	1-231-400-00	s	RESISTOR BLOCK 390x8
RB25	1-235-127-00	s	RESISTOR BLOCK 220x8

(CP-130 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
RB26	1-235-127-00	s	RESISTOR BLOCK 220x8
RB27	1-235-127-00	s	RESISTOR BLOCK 220x8
RB28	1-231-545-00	s	BLOCK, RESISTOR 33KX4
RB29	1-231-545-00	s	BLOCK, RESISTOR 33KX4
RV1	1-228-459-00	s	RES, ADJ, METAL 10K
RV2	1-228-461-00	s	RES, ADJ, CERMET 50K
RV3	1-228-461-00	s	RES, ADJ, CERMET 50K
RV4	1-228-459-00	s	RES, ADJ, METAL 10K
RV5	1-228-461-00	s	RES, ADJ, CERMET 50K
RV6	1-228-457-00	s	RES, ADJ, METAL 2K
RV7	1-228-456-00	s	RES, ADJ, METAL 1K
RV8	1-228-456-00	s	RES, ADJ, METAL 1K
RV9	1-228-455-00	s	RES, ADJ, METAL 500
RV10	1-228-456-00	s	RES, ADJ, METAL 1K
RV11	1-228-459-00	s	RES, ADJ, METAL 10K
RV12	1-228-461-00	s	RES, ADJ, CERMET 50K
S1	1-570-375-12	s	SWITCH, SLIDE
S2	1-570-375-12	s	SWITCH, SLIDE
S3	1-570-373-12	s	SWITCH, SLIDE
S4	1-570-373-12	s	SWITCH, SLIDE
S7	1-553-925-00	s	SWITCH, DIGITAL
S8	1-570-373-12	s	SWITCH, SLIDE
S9	1-553-875-00	s	SWITCH, RUBBER
S10	1-570-373-12	s	SWITCH, SLIDE
S11	1-553-875-00	s	SWITCH, RUBBER
S12	1-570-623-11	s	SWITCH, DIP 8-CKT
S13	1-570-623-11	s	SWITCH, DIP 8-CKT
S14	1-570-598-11	o	SWITCH, DIP 4-CKT
T1	1-426-038-21	s	TRANSFORMER
T2	1-426-038-21	s	TRANSFORMER

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

DP-90 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-7513-795-A	o	MOUNTED CIRCUIT BOARD, DP-90
1pc	1-560-865-00	o	CONNECTOR, DIP TYPE 40P
1pc	1-560-997-00	o	CONNECTOR, DIP TYPE 16P
1pc	1-942-316-11	o	HARNESS (DP)
1pc	1-942-315-11	o	HARNESS (EL)
C1	1-124-126-00	s	ELECT 47uF 20% 16V
C2	1-124-126-00	s	ELECT 47uF 20% 16V
C3	1-126-096-11	s	ELECT 10uF 20% 35V
C4	1-124-126-00	s	ELECT 47uF 20% 16V
CN1	1-506-634-11	o	CONNECTOR, PS 10P, MALE
CN2	1-506-618-11	o	CONNECTOR, PS 6P, MALE
IC1	8-759-204-82	s	IC TC40H244F
IC2	8-759-204-82	s	IC TC40H244F
IC3	8-759-204-82	s	IC TC40H244F
IC4	8-759-204-90	s	IC TC40H374F
IC5	8-759-204-90	s	IC TC40H374F
IC6	8-759-030-50	s	IC MC14490F
IC7	8-759-030-50	s	IC MC14490F
IC8	8-759-030-50	s	IC MC14490F
IC9	8-759-204-62	s	IC TC40H148F
IC10	8-759-204-62	s	IC TC40H148F
IC11	8-759-203-93	s	IC TC40H393F
IC12	8-759-201-60	s	IC TC40H002F
IC13	8-759-201-60	s	IC TC40H002F
IC14	8-759-201-60	s	IC TC40H002F
IC15	8-759-645-17	s	IC M54517P
IC16	8-759-645-17	s	IC M54517P
L1	1-408-413-00	s	INDUCTOR 22uH
R1	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R2	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R4	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R5	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R6	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R7	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R8	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R9	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R12	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R13	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R14	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R15	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R16	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R17	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R18	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R19	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R20	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R21	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R22	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R23	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R24	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R25	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R26	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R27	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R28	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R29	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R30	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R31	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R32	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W

(DP-90 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R33	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R34	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R35	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R36	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R37	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R38	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R39	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R40	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R41	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
RB1	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB2	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB3	1-231-545-00	s	BLOCK, RESISTOR 33KX4
RB4	1-231-545-00	s	BLOCK, RESISTOR 33KX4
S3	1-554-041-11	s	SWITCH WITH LED, TACTILE
S4	1-554-041-11	s	SWITCH WITH LED, TACTILE
S5	1-554-041-11	s	SWITCH WITH LED, TACTILE
S6	1-554-041-11	s	SWITCH WITH LED, TACTILE
S7	1-554-041-11	s	SWITCH WITH LED, TACTILE
S8	1-554-041-11	s	SWITCH WITH LED, TACTILE
S9	1-554-043-00	s	SWITCH, PUSH
S10	1-554-043-00	s	SWITCH, PUSH
S11	1-554-041-11	s	SWITCH WITH LED, TACTILE
S12	1-554-041-11	s	SWITCH WITH LED, TACTILE
S13	1-554-041-11	s	SWITCH WITH LED, TACTILE
S14	1-570-211-11	s	SWITCH, PUSH
S15	1-554-502-00	s	SWITCH, TOGGLE
S16	1-554-502-00	s	SWITCH, TOGGLE
S17	1-554-502-00	s	SWITCH, TOGGLE
S18	1-554-502-00	s	SWITCH, TOGGLE
S19	1-554-502-00	s	SWITCH, TOGGLE
S20	1-554-502-00	s	SWITCH, TOGGLE

DP-172 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8271-194-A	o	MOUNTED CIRCUIT BOARD, DP-172
CN1	1-506-634-11	o	CONNECTOR, PS 10P, MALE
R1	1-216-630-11	s	METAL, CHIP 130 0.5% 1/10W
R2	1-216-636-11	s	METAL, CHIP 240 0.5% 1/10W
R3	1-216-630-11	s	METAL, CHIP 130 0.5% 1/10W
S1	1-570-142-11	s	SWITCH, PUSH
S2	1-570-221-11	s	SWITCH, PUSH

DP-173 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8276-268-A	o	MOUNTED CIRCUIT BOARD, DP-173
C1	1-124-589-11	s	ELECT 47uF 20% 16V
C2	1-124-589-11	s	ELECT 47uF 20% 16V
CN1	1-564-849-11	o	CONNECTOR, 12P, MALE
CN2	1-564-849-11	o	CONNECTOR, 12P, MALE
D1	8-719-939-52	s	DIODE LA-301ML
D2	8-719-913-53	s	DIODE LA-301VL
Q1	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q2	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q3	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q4	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q5	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q6	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q7	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q8	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q9	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q10	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q11	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q12	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q13	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q14	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
R1	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R2	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R3	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R4	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R5	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R6	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R7	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R8	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R9	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R10	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R11	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R12	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R13	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W
R14	1-216-639-11	s	METAL, CHIP 330 0.5% 1/10W

HN-45 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
4pcs	1-615-554-11	o	PRINTED CIRCUIT BOARD, HN-45
CN206	1-506-481-11	o	CONNECTOR, 2P, MALE

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

PE-18 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-620-916-11	o	PRINTED CIRCUIT BOARD, PE-18
CN206	1-506-481-11	o	CONNECTOR, 2P, MALE
D1	8-719-955-32	s	LED PG5531KX, GRN

SW-526 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8271-195-A	o	MOUNTED CIRCUIT BOARD, SW-526 (including DP-173)
1pc	1-560-866-00	o	CONNECTOR, DIP TYPE 50P
2pcs	1-563-521-11	o	CONNECTOR, 20P, FEMALE
3pcs	7-685-871-01	s	SCREW +BVTT 3X6 (S)
1pc	1-942-317-11	o	HARNESS (SW)
1pc	7-623-422-07	s	LW 3, TYPE B
C1	1-124-589-11	s	ELECT 47uF 20% 16V
C2	1-124-589-11	s	ELECT 47uF 20% 16V
C3	1-124-589-11	s	ELECT 47uF 20% 16V
C4	1-124-589-11	s	ELECT 47uF 20% 16V
C5	1-124-589-11	s	ELECT 47uF 20% 16V
C6	1-124-589-11	s	ELECT 47uF 20% 16V
C7	1-124-589-11	s	ELECT 47uF 20% 16V
C8	1-124-589-11	s	ELECT 47uF 20% 16V
C9	1-124-589-11	s	ELECT 47uF 20% 16V
C10	1-124-589-11	s	ELECT 47uF 20% 16V
C11	1-124-589-11	s	ELECT 47uF 20% 16V
C12	1-124-589-11	s	ELECT 47uF 20% 16V
C87	1-124-589-11	s	ELECT 47uF 20% 16V
CN1	1-506-638-11	o	CONNECTOR, PS 18P, MALE
CN2	1-506-631-11	o	CONNECTOR, PS 4P, MALE
CN4	1-526-662-21	s	SOCKET, IC 40P
CN5	1-562-772-11	o	CONNECTOR, 12P, FEMALE
CN6	1-562-772-11	o	CONNECTOR, 12P, FEMALE
D1	8-719-948-10	s	DIODE LD-603DU
D2	8-719-948-10	s	DIODE LD-603DU
D3	8-719-948-10	s	DIODE LD-603DU
D4	8-719-948-10	s	DIODE LD-603DU
D5	8-719-948-10	s	DIODE LD-603DU
D6	8-719-948-10	s	DIODE LD-603DU
D7	8-719-948-10	s	DIODE LD-603DU
D8	8-719-948-10	s	DIODE LD-603DU
D9	8-719-948-10	s	DIODE LD-603DU
D10	8-719-948-10	s	DIODE LD-603DU
D11	8-719-948-10	s	DIODE LD-603DU
D12	8-719-948-10	s	DIODE LD-603DU
D24	8-719-400-18	s	DIODE MA152WK
D25	8-719-400-18	s	DIODE MA152WK
D26	8-719-400-18	s	DIODE MA152WK
D27	8-719-400-18	s	DIODE MA152WK
D28	8-719-400-18	s	DIODE MA152WK
D29	8-719-400-18	s	DIODE MA152WK
D30	8-719-400-18	s	DIODE MA152WK
D31	8-719-400-18	s	DIODE MA152WK
D32	8-719-400-18	s	DIODE MA152WK
D33	8-719-400-18	s	DIODE MA152WK
D34	8-719-400-18	s	DIODE MA152WK
D35	8-719-400-18	s	DIODE MA152WK
IC1	8-759-204-82	s	IC TC40H244F
IC2	8-759-204-82	s	IC TC40H244F
IC3	8-759-030-50	s	IC MC14490F
IC4	8-759-030-50	s	IC MC14490F
IC5	8-759-645-17	s	IC M54517P
IC6	8-759-201-61	s	IC TC40H004F
IC7	8-759-645-17	s	IC M54517P
IC8	8-759-645-17	s	IC M54517P
IC9	8-759-645-17	s	IC M54517P

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(SW-526 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
IC10	8-759-645-17	s	IC M54517P
IC11	8-759-204-82	s	IC TC40H244F
IC12	8-759-204-59	s	IC TC40H138F
IC13	8-759-204-59	s	IC TC40H138F
IC14	8-759-645-17	s	IC M54517P
IC15	8-759-204-90	s	IC TC40H374F
IC16	8-759-204-62	s	IC TC40H148F
IC17	8-759-201-61	s	IC TC40H004F
IC18	8-759-201-61	s	IC TC40H004F
IC19	8-759-204-90	s	IC TC40H374F
IC20	8-759-204-90	s	IC TC40H374F
IC21	8-759-201-60	s	IC TC40H002F
IC22	8-759-204-82	s	IC TC40H244F
IC23	8-759-201-61	s	IC TC40H004F
IC24	8-759-204-74	s	IC TC40H174F
IC25	8-759-204-74	s	IC TC40H174F
IC26	8-759-030-50	s	IC MC14490F
IC27	8-759-204-62	s	IC TC40H148F
IC28	8-759-204-54	s	IC TC40H042F
IC29	8-759-204-54	s	IC TC40H042F
IC30	8-759-030-50	s	IC MC14490F
IC31	8-759-030-50	s	IC MC14490F
IC32	8-759-204-62	s	IC TC40H148F
IC33	8-759-030-50	s	IC MC14490F
IC34	8-759-916-42	s	IC SN74HC133N
IC35	8-759-030-50	s	IC MC14490F
IC36	8-759-204-62	s	IC TC40H148F
IC37	8-759-030-50	s	IC MC14490F
IC38	8-759-030-50	s	IC MC14490F
IC39	8-759-201-60	s	IC TC40H002F
IC40	8-759-204-75	s	IC TC40H175F
IC41	8-759-030-50	s	IC MC14490F
IC42	8-759-204-62	s	IC TC40H148F
IC43	8-759-204-62	s	IC TC40H148F
IC44	8-759-204-62	s	IC TC40H148F
IC45	8-759-204-62	s	IC TC40H148F
IC46	8-759-204-62	s	IC TC40H148F
IC47	8-759-201-53	s	IC TC40H000F
IC48	8-759-240-25	s	IC TC4025BP
IC49	8-759-204-75	s	IC TC40H175F
IC50	8-759-645-17	s	IC M54517P
IC51	8-759-204-90	s	IC TC40H374F
IC52	8-759-645-17	s	IC M54517P
IC53	8-759-201-61	s	IC TC40H004F
IC54	8-759-204-60	s	IC TC40H139F
IC55	8-759-201-53	s	IC TC40H000F
IC56	8-759-201-60	s	IC TC40H002F
IC57	8-759-201-60	s	IC TC40H002F
IC58	8-759-204-75	s	IC TC40H175F
IC59	8-759-030-50	s	IC MC14490F
IC60	8-759-204-90	s	IC TC40H374F
IC61	8-759-201-61	s	IC TC40H004F
IC62	8-759-201-61	s	IC TC40H004F
IC63	8-759-008-44	s	IC MC74HC4511F
IC64	8-759-008-44	s	IC MC74HC4511F
IC65	8-759-201-61	s	IC TC40H004F
IC66	8-759-201-64	s	IC TC40H074F
IC67	8-759-201-60	s	IC TC40H002F
IC68	8-759-204-90	s	IC TC40H374F

(SW-526 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
IC69	8-759-204-82	s	IC TC40H244F
IC70	8-759-645-17	s	IC M54517P
IC71	8-759-203-93	s	IC TC40H393F
IC72	8-759-645-17	s	IC M54517P
IC73	8-759-204-90	s	IC TC40H374F
IC74	8-759-204-90	s	IC TC40H374F
IC75	8-759-201-61	s	IC TC40H004F
IC76	8-759-916-42	s	IC SN74HC133N
IC77	8-759-916-42	s	IC SN74HC133N
IC78	8-759-645-17	s	IC M54517P
IC79	8-759-030-50	s	IC MC14490F
IC80	8-759-204-62	s	IC TC40H148F
IC81	8-759-204-90	s	IC TC40H374F
L1	1-408-409-00	s	INDUCTOR 10uH
R1	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R2	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R3	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R4	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R5	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R6	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R7	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R8	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R9	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R10	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R11	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R12	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R13	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R14	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R15	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R16	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R17	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R18	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R19	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R20	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R21	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R22	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R23	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R24	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R25	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R26	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R27	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R28	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R29	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R30	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R31	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R32	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R33	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R34	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R35	1-216-627-11	s	METAL, CHIP 100 0.5% 1/10W
R36	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R37	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R38	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R39	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R40	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R41	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R42	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R43	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R44	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(SW-526 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R45	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R46	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R47	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R48	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R49	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R50	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R51	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R52	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R53	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R54	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R55	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R56	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R57	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R58	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R59	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R60	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R61	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R62	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R63	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R64	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R65	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R66	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R67	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R68	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R69	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R70	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R71	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R72	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R73	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R74	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R75	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R76	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R77	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R78	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R79	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R80	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R81	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R82	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R84	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R86	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R88	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R90	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R91	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R92	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R93	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R94	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R95	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R96	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R97	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R98	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R99	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
R100	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R101	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R102	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R103	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R104	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R105	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R106	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R107	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W

(SW-526 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R108	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R109	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R110	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R111	1-216-644-11	s	METAL, CHIP 510 0.5% 1/10W
R115	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R116	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R117	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R118	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R119	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R121	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R122	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R123	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R124	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R125	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R126	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R127	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R128	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R133	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R134	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R135	1-216-624-11	s	METAL, CHIP 75 0.5% 1/10W
R136	1-216-624-11	s	METAL, CHIP 75 0.5% 1/10W
R137	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R138	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R139	1-216-624-11	s	METAL, CHIP 75 0.5% 1/10W
R140	1-216-624-11	s	METAL, CHIP 75 0.5% 1/10W
R141	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R142	1-216-633-11	s	METAL, CHIP 180 0.5% 1/10W
R143	1-216-651-11	s	METAL, CHIP 1K 0.5% 1/10W
R146	1-216-631-11	s	METAL, CHIP 150 0.5% 1/10W
RB1	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB2	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB3	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB4	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RB5	1-235-052-00	s	RESISTOR BLOCK 33Kx8
RV1	1-226-786-21	s	RES, VAR, METAL 10K
RV2	1-224-981-21	s	RES, VAR, METAL 5K
RV3	1-224-981-21	s	RES, VAR, METAL 5K
RV4	1-224-981-21	s	RES, VAR, METAL 5K
RV5	1-224-981-21	s	RES, VAR, METAL 5K
S2	1-554-041-11	s	SWITCH WITH LED, TACTILE
S3	1-554-041-11	s	SWITCH WITH LED, TACTILE
S4	1-554-041-11	s	SWITCH WITH LED, TACTILE
S5	1-554-041-11	s	SWITCH WITH LED, TACTILE
S6	1-554-041-11	s	SWITCH WITH LED, TACTILE
S7	1-554-041-11	s	SWITCH WITH LED, TACTILE
S8	1-554-041-11	s	SWITCH WITH LED, TACTILE
S9	1-554-041-11	s	SWITCH WITH LED, TACTILE
S10	1-554-041-11	s	SWITCH WITH LED, TACTILE
S11	1-554-041-11	s	SWITCH WITH LED, TACTILE
S12	1-570-214-21	s	SWITCH, PUSH
S13	1-570-214-41	s	SWITCH, PUSH
S14	1-570-214-71	s	SWITCH, PUSH
S15	1-570-214-61	s	SWITCH, PUSH
S16	1-554-041-11	s	SWITCH WITH LED, TACTILE
S17	1-570-212-11	s	SWITCH, PUSH
S18	1-570-212-21	s	SWITCH, PUSH
S19	1-570-212-31	s	SWITCH, PUSH
S20	1-570-212-41	s	SWITCH, PUSH
S21	1-570-807-11	s	SWITCH, PUSH

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(SW-526 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
S22	1-570-807-21	s	SWITCH, PUSH
S23	1-570-807-31	s	SWITCH, PUSH
S24	1-570-807-41	s	SWITCH, PUSH
S25	1-554-041-11	s	SWITCH WITH LED, TACTILE
S26	1-554-048-00	s	SWITCH WITH LED, PUSH
S27	1-554-048-00	s	SWITCH WITH LED, PUSH
S28	1-554-048-00	s	SWITCH WITH LED, PUSH
S29	1-554-048-00	s	SWITCH WITH LED, PUSH
S30	1-554-048-00	s	SWITCH WITH LED, PUSH
S31	1-554-048-00	s	SWITCH WITH LED, PUSH
S32	1-554-048-00	s	SWITCH WITH LED, PUSH
S33	1-554-048-00	s	SWITCH WITH LED, PUSH
S34	1-554-048-00	s	SWITCH WITH LED, PUSH
S35	1-554-048-00	s	SWITCH WITH LED, PUSH
S36	1-554-048-00	s	SWITCH WITH LED, PUSH
S37	1-554-048-00	s	SWITCH WITH LED, PUSH
S38	1-554-041-11	s	SWITCH WITH LED, TACTILE
S39	1-554-041-11	s	SWITCH WITH LED, TACTILE
S40	1-554-041-11	s	SWITCH WITH LED, TACTILE
S41	1-554-048-00	s	SWITCH WITH LED, PUSH
S42	1-554-048-00	s	SWITCH WITH LED, PUSH
S43	1-554-048-00	s	SWITCH WITH LED, PUSH
S44	1-554-048-00	s	SWITCH WITH LED, PUSH
S45	1-554-048-00	s	SWITCH WITH LED, PUSH
S46	1-570-218-11	s	SWITCH, PUSH
S47	1-570-219-11	s	SWITCH, PUSH
S48	1-570-217-11	s	SWITCH, PUSH
S50	1-570-213-71	s	SWITCH, PUSH
S51	1-571-569-11	s	SWITCH, PUSH
S52	1-570-218-11	s	SWITCH, PUSH
S53	1-570-219-11	s	SWITCH, PUSH
S54	1-570-217-11	s	SWITCH, PUSH
S55	1-570-213-51	s	SWITCH, PUSH
S56	1-570-213-71	s	SWITCH, PUSH
S57	1-554-040-11	s	SWITCH, PUSH
S58	1-554-039-11	s	SWITCH WITH LED, PUSH
S59	1-554-040-11	s	SWITCH, PUSH
S60	1-554-039-11	s	SWITCH WITH LED, PUSH
S61	1-554-048-00	s	SWITCH WITH LED, PUSH
S62	1-554-048-00	s	SWITCH WITH LED, PUSH
S63	1-554-048-00	s	SWITCH WITH LED, PUSH
S64	1-571-289-11	s	SWITCH, DIGITAL ROTARY
S65	1-571-289-11	s	SWITCH, DIGITAL ROTARY
S68	1-554-048-00	s	SWITCH WITH LED, PUSH
S69	1-554-048-00	s	SWITCH WITH LED, PUSH
S70	1-554-048-00	s	SWITCH WITH LED, PUSH
S71	1-554-048-00	s	SWITCH WITH LED, PUSH
S72	1-554-048-00	s	SWITCH WITH LED, PUSH

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
	1-464-765-12	s	DISPLAY UNIT, EL
C101	1-136-205-11	s	FILM 0.022MF 5% 630V
C102	1-136-205-11	s	FILM 0.022MF 5% 630V
CN1F(to DP-90 BOARD)			
	1-563-119-11	o	HOUSING, 10P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN1F(to PE-18 BOARD)			
	1-562-147-11	s	HOUSING, 2P
	1-563-088-11	o	CONTACT, FEMALE, AWG24-30
CN1F(to SW-284 BOARD)			
	1-563-123-11	o	HOUSING, 18P
	1-563-115-21	o	CONNECTOR, FEMALE AWG24-28
CN2F(to DP-90 BOARD)			
	1-563-117-11	o	HOUGING, 6P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN2F(to SW-282 BOARD)			
	1-563-116-11	o	HOUSING, 4P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN3F(to CP-130 BOARD)			
	1-563-126-11	o	HOUSING, 24P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN4F(to CP-130 BOARD)			
	1-563-119-11	o	HOUSING, 10P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN5F(to CP-130 BOARD)			
	1-563-118-11	o	HOUSING, 8P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN6F(to CP-130 BOARD)			
	1-563-117-11	o	HOUGING, 6P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN7F(to CP-130 BOARD)			
	1-563-122-11	o	HOUSING, 16P
	1-563-115-11	o	CONTACT, FEMALE AWG24-28
CN100	1-942-314-11	o	HARNESS (CCU)
FB101	1-543-609-11	s	CORE, FERRITE
J101	1-507-676-00	s	JACK, PHONE "INCOM-1"
J102	1-507-676-00	s	JACK, PHONE "INCOM-2"
R101	1-214-537-00	s	METAL 150 1% 1/8W
R102	1-214-537-00	s	METAL 150 1% 1/8W
RV101	1-237-981-11	s	CARBON 20K "INCOM-1 LEVEL"
RV102	1-237-981-11	s	CARBON 20K "INCOM-2 LEVEL"
S101	1-552-926-21	s	SWITCH, PUSH "CCU POWER"
S102	1-570-172-11	s	SWITCH, PUSH (1 KEY) "CALL"
S103	1-571-070-11	s	SWITCH, TOGGLE "MIC 1"
S104	1-571-070-11	s	SWITCH, TOGGLE "MIC 2"
S105	1-571-070-11	s	SWITCH, TOGGLE "MIX"
S106	1-571-070-11	s	SWITCH, TOGGLE "PGM/PD"
S107	1-571-070-11	s	SWITCH, TOGGLE "PRIV"
S108	1-464-485-11	s	ENCODER, ROTALY
S109	1-464-485-11	s	ENCODER, ROTALY
S110	1-464-485-11	s	ENCODER, ROTALY
S111	1-464-485-11	s	ENCODER, ROTALY
S112	1-466-031-21	s	ENCODER, ROTARY "IRIS"
S113	1-466-031-31	s	ENCODER, ROTARY "FOCUS"

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(FRAME)

Ref. No. or Q'ty	Part No.	SP	Description
VDR101	1-806-500-11	s	VARISTOR ERZ-C05DK390
VDR102	1-806-500-11	s	VARISTOR ERZ-C05DK390

PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-7405-089-B	o	MOUNTED PCB (LEFT), RACK
1pc	A-7405-103-B	o	MOUNTED PCB (RIGHT), RACK
1pc	A-8262-362-A	o	RACK MOUNT (F) ASSY
1pc	1-942-313-12	o	HARNESS (INCOME B)
4pcs	2-297-913-00	s	WASHER (DIA.5), ORNAMENTAL
2pcs	3-733-100-01	o	ANGLE (10U), RACK
4pcs	7-682-274-04	s	SCREW +RK 5X8
4pcs	7-682-277-04	s	SCREW +RK 5X14
6pcs	7-682-561-09	s	SCREW +B 4X8
8pcs	7-682-575-09	s	SCREW +B 5X10

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

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